

Fungal Infection of skin (17)

Introduction

- Room Temp → Molds
- Human Tissue or Culture at 37°C → Yeast
→ Dimorphic (Histoplasma, Coccidioides)

Classification of fungi:

MultiCellular fungi (Molds)

present in form of Filaments called Hyphae (Mycelium is a mass of Hyphae)

Types → Dermatophyte Molds e.g. Tinea, Non " " e.g. Aspergillus

Unicellular Fungi (Yeast)

present singly in form of one cell.

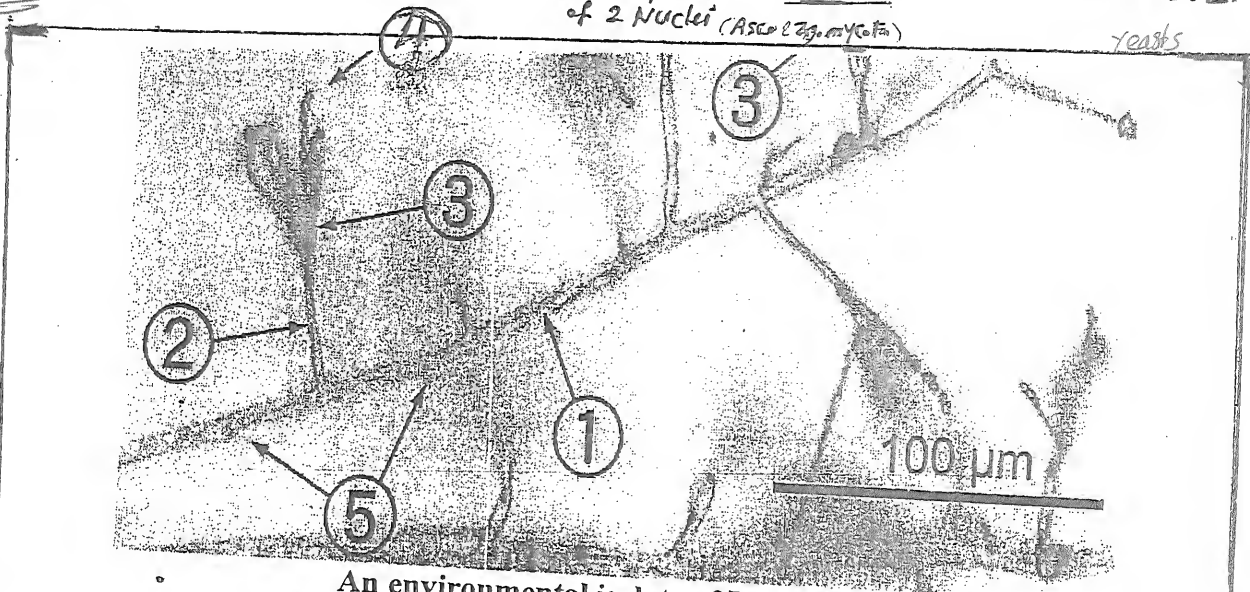
reproduct: is by

Binary fission, Budding or by Pseudo hyphae

e.g. Candida & Malassezia, Crypt. Coccus

Reproduct- is by format- of spores

Sexual Formed by union of 2 Nuclei Asexual (Ascomycota)



An environmental isolate of Penicillium
1. hypha 2. conidiophore 3. phialide 4. conidia 5. septa

The thallus of mould is made of hyphae, which are cylindrical tube like structures that elongates by growth at tips. A mass of hyphae is known as mycelium. It is the hypha that is responsible for the filamentous nature of mould. The hyphae may be branched or unbranched. They may be septate or aseptate. Hyphae usually have cross walls that divide them into numerous cells. These cross walls, called septa have small pores through which cytoplasm is continuous throughout the hyphae. Therefore all hyphal fungi tend to be coenocytic (multinucleate). With exception of zygomycetes (Rhizopus, Mucor), all moulds are septate.

Unicellular Fungi: (Round & Pseudohyphae):

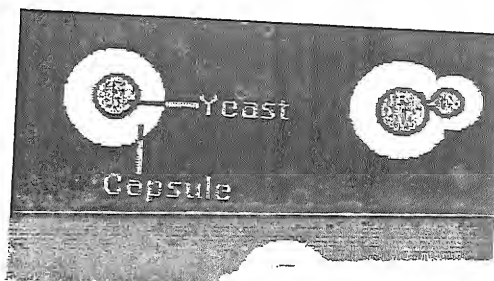
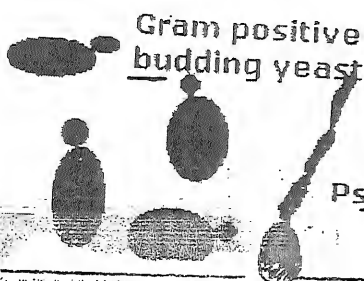
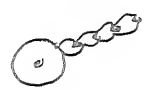


TABLE 23-1. TERMINOLOGY OF FUNGI

Term	Definition	Example
Dermatophyte	Imperfect fungi	<i>Trichophyton</i> , <i>Microsporum</i> , <i>Epidermophyton</i>
Dermatomycosis	Any fungal infection of the skin caused by dermatophytes, yeast, or fungi including those that do not usually cause disease	
Arthrospores	Asexual fungal spore formed by hyphal segmentation	<i>Coccidioides immitis</i>
Hyphae	The fine branching tubes that make up the body (or mycelium) of a multicellular fungus	Dermatophytes
Mycelium	Intertwining mass of hyphae	
Yeast	Round to oval fungal forms that reproduce by budding or blastogenesis	<i>Candida</i> , <i>Cryptococcus</i> , <i>Malassezia</i>
Blastoconidia	Daughter cells of parent yeast	
Pseudohyphae	A chain of easily disrupted fungal cells with constrictions rather than depth at the junctions	<i>Candida</i> spp.
Dematiaceous fungi	Mold or yeast with melanin pigment in their walls	<i>Phaeohiphomyces</i> , <i>Chromomycosis</i>
Sporangia	Spherule containing endospores	<i>Coccidioides immitis</i>
Sporangio blasts	Another term for endospores	<i>Rhinosporidium seeberi</i>
Grains	Dense accumulations (microcolonies) of fungi or bacteria	<i>Eumycetoma</i>
Tinea	Clinical term to describe superficial fungal infections of the skin	<i>Tinea</i> Facies, cruris, pedis, manus
Dimorphic	Fungus that grows in more than one form (mold, yeast, sclerotic body, sulfur grains, spherules with endospores,	<i>Histoplasmosis</i> , <i>coccidiomycosis</i> , <i>blastomycosis</i> , <i>paracoccidiomycosis</i>



Inf. ④

A Superficial:

B Cutaneous:

Both infect Keratin of skin, Hair & Nail

Stratum Corneum

- doesn't induce significant Histopathological response (inflammation)

- Can Induce Hp response (inflammation) (changes)

- S. PVC (TVC)
- Piedra
- T. Nigra

- S. Dermatophytes (Ring worm)
- Candida

C Subcut. Mycoses:

D Systemic Mycoses:

infect dermis & S.C.T d.t Traumatic Implantation of organism present in the Environment

Infect deeper structures by inhalation Hematogenous dissemination

- Sporotrichosis
- chromoblastomycosis
- MYcetoma
- lobomycosis
- phaeohyphomycosis

NB

Dermatomyces:
inf by any fungi

Dermatophytosis:
Dermatophyte inf.

Endemic respiratory Mycoses (dimorphic)

- Histoplasmosis
- Blastomycosis
- Coccidioidomycosis
- Paracoccidioidomycosis
- Phaeohyphomycosis

Mode: inhalation
affect RT
Endemic in certain areas

Opportunistic Systemic Mycoses

(in Immunosuppressed in any geographic area)

- Candidiasis
- Cryptococcosis
- Mucormycosis
- Fusariosis
- Aspergillosis

Cryptococcosis shows features of Both.

Dimorphic are: Sporotrich + Endemic Respiratory

- 1- Histoplasmosis
- 2- Cryptococcosis
- 3- Blastomycosis

(1) Superficial fungal skin infection → TVC (Pityriasis or Tinea Versicolor)

Egg. dist → hot, humid, tropical, (Versicolor)
 Incid. Rate there → 30-40% of Populations.

• Malassezia
 on NL skin
 Flora
 In TVC there
 ↑ NO then
 shift
 from Yeast
 form to
Mycelial
 Form Filament

• Age → Young adults (20-35 Ys) (time of most active glands)
 Sex → Neonates (<6ms ??) (rare before pub. & >65 Ys).
 AET: • Dimorphic Yeast (Commensal Pathogenic)
 • Malassezia furfur 14 نوع
 → M. globosa (Commensal Yeast) but in small amount on NL skin
 → M. sympodialis 20% of infants.
 M. nana 100% of Adults
 under Predisposing.

Conditions. Change to (Pathogenic: Mycelial form)

- 1- High Temp. & Humidity & Sweating
- 2- Hereditary: (+ve FH) in (18%) of pts
- 3- Immune Compromised: Cushing, Cs

• 4- bath oils & Skin Lubricants

5. pregnancy. & OCPS

Q. Clinical Variety: (سائر الالتهابات)

- | | | |
|--------------|--|---------------|
| Race / child | 1. Hyperpigmented | 7. Papular |
| | 2. Hypo pigmented | 8. Atrophic |
| | 3. Erythematous (pink) | 9. Trichotome |
| | 4. Follicular (erythem. papules or pustules). | |
| | 5. Inverse (affect flexures) | |
| | 6. Achromia parasitica (Paler lesions in sun tanned & dark individuals). | |
- (more in Immuno comp). →
- the dis is asympt. but disfiguring, However slight Itching may occur. Spont. Remission may occur in Winter & recur. in summer.

(Recurrence Rate: 60-80% Why ??)

± d.t → inadequate coverage of Large infected areas
 → certain unknown predisposing factors.

• Sites: any site can be affected; but the commonest is seborrheic rich sites (chest, back, proximal limbs)
 Fine scaling covers the lesions. (بالبشرة)

What's NOT in PV??

- NOT an infectious disease.
- NOT more common in patients with poor hygiene.
- NOT cured by washing & scrubbing.

Diagnosis :-

① Typical clinical features

② W.L → -- ?? Yellow Fluorescence @ Hypo pigm.

③ Direct KOH Exam. of scraping or a Cellophane tape & Methylene blue Reveals double

④ "Spaghetti & Meat balls": short thick hyphae (cigar-butt sign) + Large no of Variable sized spores

④ Pathology: (H&E)

- Hyperkeratosis & parakeratosis = scales
- Acanthosis → ↑ thickness of spinous cell layer
- perivascular infilt. Lymphocytes, Plasma cells, Histocytes

Special Stain:

PAS or Methanamine Silver:

- Abundant hyphae
- Round, budding, Cellular fungal element

in st. Corneum

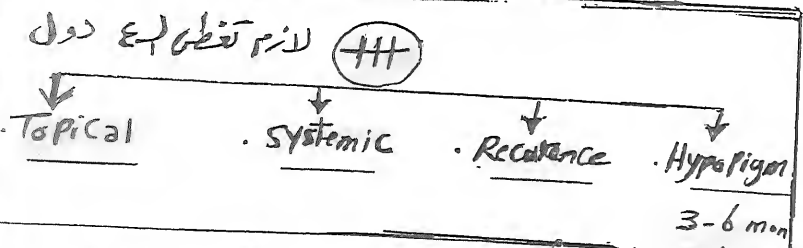
⑤ Culture: (Exotic) [NL Flora]

Pathogenesis of Hyperpigmented & Hypopigmented

- ① Hyperkeratosis
- ② Large No of organisms
- ③ Superficial Lymphocytic infilt.
- ④ Macromelanosomes

- ① Production of dicarboxylic acids as "Azelaic w"
 - tyrosinase
 - Cytotoxic to MCs → NL MCs but ↓ ↓ Melanosomes

② M. Furfur may Filter UVL → Prevent tanning of infected areas.



A. Topical #:

- Imidazole group of antifungals (Ketconazole?)
- Antiyeast Antifungals: (Clotrimazole, Miconazole)

- Selenium Sulphide 2.5% eg Selsun Blue
- Zinc pyrithion 2% eg Seborrheal shampoo
- Na^{Hy} sulfacetamide (20%)
- Na thiosulfate

"Trunk" تقطع كل

B) Systemic HT $\begin{cases} \text{Extensive} \\ \text{Recurrent} \\ \text{Resistant} \end{cases}$

x ① Griseofulvin : \rightarrow Not effective

x ② Terbinafine: eg lamisol or Terbin
 . systemic \rightarrow Not effective

u - Topical \rightarrow Effective.
 eg Terbin. fine foam spray

③ Fluconazole (150 caps)
 e.g. Flucanul
 Diflucan
 1- كبسولة ايدوفا
 2- 4- 8 ايدو
 2x2 w

④ Itraconazole (100 caps)
 e.g. Itracan
 Itrapol
 كبسولات مرتين يومياً لمدة ١٤ (١٤) يوم
 2x7 days

x ⑤ Ketoconazole (200 mg tab) :
 hepatotoxic \leftarrow لأن
 تم إيقافه لسوء
 ٢ قرص جرعة واحدة أو قرصين يومياً لمدة
 ١٠ أيام
 2 ديس
 1x10 (أو)

C) Prophylactic HT: (prevention of Recurr.) (الناظرية)

الشامبو
 كبسولات
 A) Nizoral shampoo : For life
 مرة كل أسبوعين أو أسبوع

B) Ketoconazol, Itraconazol or Fluconazol
 (1- 2 كبسولة كل شهر وهو مفضل)
 (الصفحة)

D) HT of Hypopigment:
 ① Reassurance (ما يوجد له علاج)
 ② Topical CS
 ③ NB-UVB.

① TVC

② S.D & Dandruff

③ AD (Atopic dermatitis)

④ pityrosp. Folliculitis

⑤ Seborrheic dermatitis

⑥ Confluent & Reticulate Papillomatosis. (CRP)

* Has role in acne

- 1st coq.
- Nemat.
- systemic mg
- Nematostatin
- IV fat emulsion
- Blepharitis
- otitis externa
- Acne Necrotica
- Miliaris.
- chr. Dermatitis
- pit. Alba. ??
- onychomycosis

(Malassezial Folliculitis)

Pityrosporum Folliculitis

Def: Pityrosporum yeast inf. of hair follicles. (Furfur & Globosa).

predisposing agents:

- ① Tetracycline use in H of Acne.
- ② Temp. & Humidity.
- ③ occlusion.
- ④ DM & Immuno-suppression.

Criteria for Dx: (Q > 0¹):

- ① chr Morphology: chr, Moderately itchy, dome shaped Follicular papules & pustules that:

مطابق عینہ

- Affect Central back & chest & + Face
- Itchy
- Grouped (Molluscum like)
- young adult taking (Tetracycline) for Acne.

- ② Wood's Light: yellow green.
- ③ +ve smear or Biopsy (only yeast forms / No hyphae)
- ④ Prompt Response to Antifungals.

① Treatment: as "TVC" ✓

② DD: 1 - AV
2 - staph folliculitis
3 - Acne form Erupt (عقب بقرقہ)

synt
150 tretinoin
+
AKmetoxide

نالیہ بیچر
لوا تفریقہ بینہ و بیچر
Acne
Folliculitis
↓ اعلى
Panoxyl 5 gel
بہ تفریقہ مع لک

Different species of Malassezia and common clinical presentations.

(را حفظ اسماء
الشعوى)

DIFFERENT SPECIES OF MALASSEZIA AND COMMON CLINICAL PRESENTATIONS	
Species of Malassezia	Common clinical presentations
<i>M. furfur</i>	Pityriasis versicolor, seborrheic dermatitis, folliculitis, neonatal cephalic pustulosis, blepharitis, and systemic infections in neonates receiving intravenous fat emulsions
<i>M. globosa</i>	Seborrheic dermatitis, pityriasis versicolor, folliculitis, neonatal cephalic pustulosis
<i>M. sympodialis</i>	Pityriasis versicolor, neonatal cephalic pustulosis ^(*)
<i>M. pachydermatitis</i>	Often isolated from domestic and wild animals; has occasionally been implicated in cases of systemic infection in humans; may play an important role in chronic dermatitis and otitis externa
<i>M. restricta</i>	Seborrheic dermatitis
<i>M. slooffiae</i>	Uncommon isolate
<i>M. obtusa</i>	Uncommon isolate

المطروحة 11 النوع

Malassezia

1. Furfur
2. Globosa (TUE)
3. Sympodialis (أخضر فلفا)
4. restricta
5. obtusa
6. pachydermatitis
7. slooffiae
8. nana
9. Japonica
10. Yamatoensis
11. dermatitis

Confluent & Reticulate Papillomatosis

(Gougerot - Carteaud Synd.) (2014)

Mid line ← chest
back

- affects girls soon after puberty. (new 1:1)
- Hyperpigmented grayish-brown papules in: Neck, Flexures, intermammary & interscapular areas. Coalesce → Reticulated pattern peripherally & confluent plaques centrally. ± Papillomatosis

Topical & systemic Antibiotic & Antifungal

Treatment: (Best)

1. Topical:
 - ① Oral Antibiotic - Fucidin
 - ② Mupirocin - Retin A
 - ③ Tazarotene - Antifungals

2. Systemic:
 - Minocycline
 - Erythromycin
 - Antifungals

Etiopathogenesis

- Hereditary
- Endocrinopathy (Cushing & pregnancy)
- Keratinization disorder (↑ K16)
- Bacterial → *Dietzia* strain X (strain of *Actinomyces*)
- Fungal → *Malassezia*
- Amyloid Type.

DD AN (acanthosis Nigricans)

- PVC
- Darrier
- Terra firma form ← انقصة بقعة
- Pseudo atrophoderma
- Coli
- Dermatitis neonatal ←

DD diseases of midline

- CRP
- Petaloid SD
- Pityrosp-folliculitis
- REM synd

(8)

Other Non inflammatory Superfacial
Mycoses

(11)

- Tinea Nigra
- Piedra

• Tinea Nigra
(Superficial Phaeohyphomycosis)

- Epidemiology: • Age, sex, Race → any
• Common in Tropical climates (افريقيا، الشرق الأوسط، أمريكا)
- Causative Fungus: (Hortaea Werneckii) هورتا فيرنكيس
(Phaeoannellomyces Werneckii) فافس

- CIP Asympt., Palmar (rarely plantar) Hyperpigmented
(Brown, Black, gray or green) Patch, non scaly (but ±
scaly or velvety). (rare in sole)

- KOH & Culture → Dematiceous Fungus (Pigmented
Sabouraud's Hyphae)

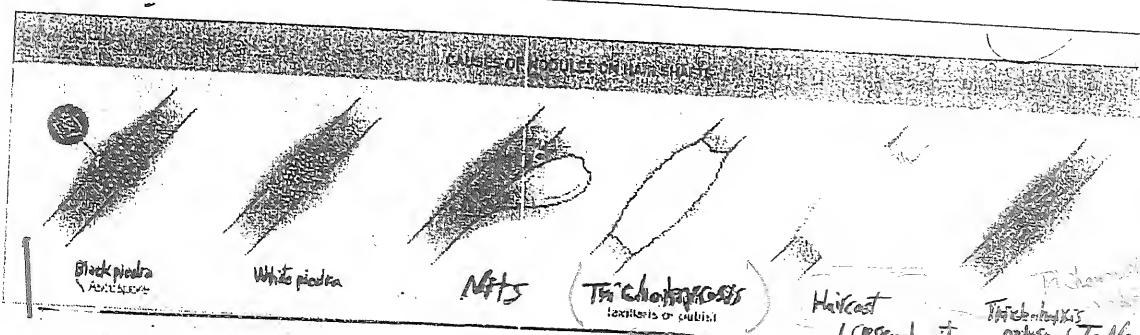
- (نادر)
• DD ① Melanocytic Nevi & Melanoma^{M9} → Metastasis
② FOE → sudden onset ← Fixed drug eruption
③ Addison's → palmar

- ## Topical Azoles

Piedra

Def.: Piedra, which means 'stone' in Spanish, is an asymptomatic superficial fungal infection of the hair shaft

	White <u>piedra</u>	Black <u>piedra</u>
Causative organism & <u>Source</u> .	<i>Trichosporon beigelli</i> (الاسم الجديد T. Asahii). + other 5 species * Source: soil, air, water, vegetable matter, or sputum or on body surfaces (Flora)	<i>Piedraia hortae</i> * Source: soil & stagnant water.
Favored climate	* Temperate and semitropical climates (such as those in South America, Asia, Europe, Japan, and parts of the southern United States).	Tropical (many central South American countries, including Brazil, as well as in Southeast Asia)
Pathogenesis	Infection usually commences under the cuticle of the hair shaft and extends outward. Hair breakage may occur as a result of shaft rupture at the site of the nodules. As the nodules enlarge, they can even envelope the hair shaft	
Nodule color	White (may be red, green or light brown) Face	Brown to black
Nodule firmness and adherence	Soft and loosely attached to hair	Hard and firmly attached
Typical anatomic location	• Face & Flexures (beard) الزقن	Scalp and face (occasionally in pubic region) الرأس
KOH examination of 'crush prep' of cut hair shafts	(Non)dematiaceous hyphae with blastoconidia and arthroconidia	Dematiaceous hyphae with asci and ascospores
Culture on Sabouraud's agar	* Moist, creme-colored, yeast-like colonies	brown-black colonies
Treatment	1- Topical: Clip affected hairs (ttt of choice), wash affected hairs with antifungal shampoo (نيزورال-سلسن بلو-باتر افين- (ميكوناز). 2- Systemic (terbinafine)	



DD: Causes of Hair Shaft Nodules

- Piedra
- Nits
- pseudonits
- Trich. Nodosa
- Trich. mycosis

Haircast
✓ (Pseudonits)
Trichomycosis nodosa (T. Nodosa)

Dermatophytes (Dermatophytosis, ringworm, Tineas)

Introduction: Pathogenic keratinophilic fungi, that can attack dead keratinous structures of skin (st. corneum), hairs and nails and produce disease known as ringworm or tineas.

Classification :

1- According to their macroconidia (asexual spores):

Trichophyton (abbreviated as "T") : attack the skin, hair and nail.

Microsporum ("M"): attack skin and hair.

Epidermophyton ("E"): attack skin and nails.

2- According to their ecology (source):

Category	Mode of transmission	Typical clinical features
Anthropophilic (<i>T. rubrum</i> , <i>T. tonsurans</i> , <i>T. violaceum</i> , <i>T. schoenleinii</i> , <i>M. audouinii</i> and <i>M. ferrugineum</i>).	Human to human	Mild to non-inflammatory, chronic
Zoophilic (Cats, Dogs, <i>الكلب</i>) (<i>M. canis</i> ; originating from cats and dogs, <i>T. verrucosum</i> ; originating from cattle, <i>M. distortum</i> ; a variant of <i>M. canis</i>) <i>T. Mentagrophy</i> .)	Animal to human	Intense inflammation (pustules and vesicles possible), acute
Geophilic <i>M. gypseum</i> , <i>M. fulvum</i>	Soil to human or animal	Moderate inflammation

• Microsp →
Animal except
1. M. aud.
2. M. Ferrugin
• Trichoph. → Human except

• Verrucosum /
• Mentagrophytes

• WL
• Microsp → +ve

• Trich. → -ve
Except schon

• Microsporum →
Small ecto

• Trichophyton →
Large ecto, endo,
Favic

Tinea (ringworm)

Def.: Dermatophyte skin infection.

Types : Depending on which part of the body is affected, it is given a specific name.

- [-] Tinea capitis (head)
- [-] Tinea faciei (face) ← (Non hairy part of face)
- [-] Tinea barbae (beard)
- [-] Tinea corporis (body) or (Circinata)
- [-] Tinea cruris (groin) ← (Buttocks)
- [-] Tinea manuum (hand)
- [-] Tinea pedis (foot)
- Tinea unguium (nail) = Onychomycosis

Pathogenesis :-

- ① Adherence : to KCS. (Arthroconidia + KCS)
inf → منسحب → بجدار
- ② Germinat : of Arthroconidia & Prolongate of Hyphae.
- ③ penetrat : of & in bet. KCS (st. corneum)
- ④ Host immune resp. development of inflamm. at dermis & st. Malpighii

Host Defence against Fungi

- ① Transferrin attack & bind to Hyphae
- ② Fatty acids from Seb. glands --- growth
- ③ Dermatophytes itself are chemotactic → Complement, Neut. & Monocytes
- ④ CMI
- ⑤ HI (Igs ??) ✓ In wall of *T. rubrum* → -- CMI → inf tends to be chronic
- ⑦ Mannan : Poly saccharide

Tinea Capitis

Def.: Dermatophyte infection of skin and hair follicle of scalp (or eyebrow & lashes)

Epidemiology:

Age: usually < 10 years (peak 3-7).

(مخوى: له نادرة في الكلب -)

Sebum

Malassezia

مخوى

- the most Common

T. tonsurans

- M. canis

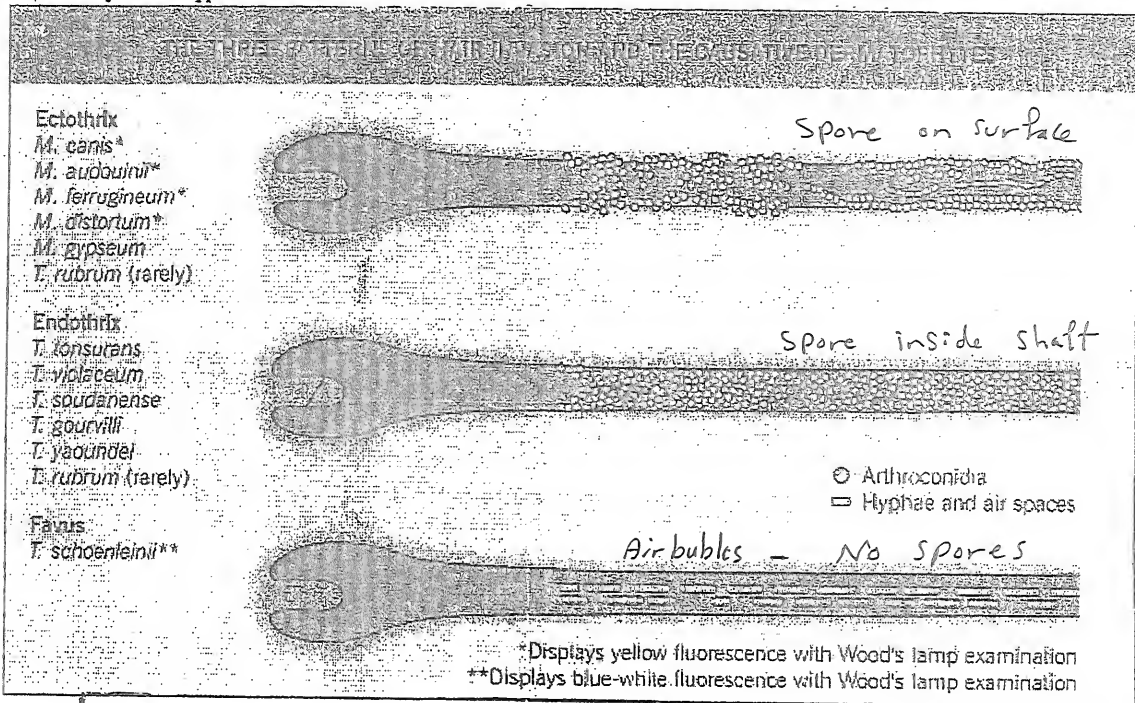
- T. violaceum

- Never

E. floccosum

T. rubrum

T. interdigitata



Ectothrix

- Hyphae: inside the Hair Shaft

- Spores: on surface of the Hair Shaft → mild damage (damaged Cuticle)

small spore Ecto-

thrix spores are small & disarranged.

Scaly Type

- M. audouinii
- M. canis
- M. gypseum

Endothrix

- Hyphae & Spores are inside the hair shaft → severe damage. Intact Cuticle

large-spored Ectothrix spores are large & arranged in chains.

Kerion

(large spore animal type)

- T. verrucosum
- T. mentagrophytes

Favus

- Hyphae & Air bubbles inside the hair (No spores)

minimal damage but looks abnl. (Lusterless)

- They survive at Hair surface → Tangled mass of Hyphae & KCS debris (Scutula)

Favus

T. schoenleinii

Black dot

- T. tonsurans
- T. violaceum
- T. soudanense

All Types of Fungi cause Ectothrix (Except) (Tons., viol. & Schoen.)

- Trarubrum (rare): Ecto & Endothrix

4. Clinical types

(17)

① Scaly type

Localized (Grey Patch)
 Diffuse (Seborrheic Like)
 Localized area of scaling & hair lost, broken, easily epilated. Gray dull
 (usually e-) (moth eaten hair loss)

② Black dot type

hair Broken at surface of skin so looks like black dots.

③ Inflammatory type

Kerion (Severe type)
 Boggy swelling
 Loose hair Removed
 Seropus
 L.N
 AET animal type
 sp. T. Vermiculus & Microsporum
 Copathogens play a role.
 Pathogenesis: Hypersensitivity to animal Fungus → severe inflammation

Augment or Agminate Folliculitis (Mild type)
 Well defined Erythematous plaques
 studied & follicular pustules

④ Favic type (Favus = Honey Comb)

88

start at childhood & may progress to adulthood

may affect skin, Hair, Nail

ck By: Scutula (Sulfur Cup Pierced Centrally by the hair) Concave

③

Mousy or cheesy odour

Hair: intact but Lusterless atrophic scarring

Don't Resolute At puberty

organism: T. schoenleinii

NB: Scutulas Colonies + Inflamm. exudate

only Kerion & Favus if Not Treated → Cic. Alopecia.

Diagnosis:

1. Scalp & KOH: (+ve) → {only small scale left}
2. W.L → only +ve e → Green-fluorescence.
3. Biopsy & Culture.

DD of T. Capitis = DD of scaly scalp in children.

(... آبرو آبرو ...)

Localized scaly type (Gray Patch)

AA ← adult (Wk)
sudden onset
completely NL
scalp w is
totally devoid
of hair
Exclamation Mark.

B. Diffuse scaly scalp (Seborrheic Like T. Capitis)

1. SD ← adult
greasy scales
Erythema
other Seb. sites

→ 2. AD: other atopic
manifestations.

3. Psoriasis ← Erythema
silvery scaling
More marginal
other sites.
+ve Biopsy.

→ 4. PRP: other manif.

2. Trichotillomania ← usually ♀ child or Adolescent
bizarre hair
picture (some intact
some broken)
intact scalp
Window test ??
Biopsy

Trich & Alopecia ← Moth eaten
Alopecia
invs for ♂: +ve.

Crusted impetigo: ← Crust (not) scale
Pus & matted hair.
± pediculosis

Pityriasis Amiantacea: (See P.S.).

Scarring Alopecia (See Cicatricial
Alopecia).

C. DD of Kerion, fg

Abscess

1. More constitutional
manifestations
2. + L.N
3. incision → pus
4. No hair falling

Kerion

- ↓ L.N & FAHM
- hair loss. incision → pus

18

Treatment

- Systemic (F/X) (7)
- Topical: Adjuvant (↓ Shedding & Infectivity)

(1) - Griseofulvin (1st line)

Adult: 0.5 - 1 gm / day (Micronized)

Children:

Griseofulvin
Weight
Type of Inf.
Microsporidia > Trich.

Micronized: 10 - 20 mg / Kg / d

Ultra micronized: 5 - 10 mg / Kg / d

with Fatty meal
or Ice Cream for
6 w - 8 w

(Some resistant
Cases need
upto 16 w)

(طريقه اخرى)

(2) Terbinafine:

eg lamisil tab $< 125 \text{ mg}$
250

3 - 6 mg / Kg / d (wt < 20 kg \rightarrow 62.5 mg / d | wt: 20 - 40 kg \rightarrow 125 mg / d | wt > 40 kg \rightarrow 250 mg / d)
For 4-8 w

More effective against Trichophyton

(2) Ketoconazole: Not preferred ~~due to~~ Hepatotoxic effect

3 - 4 mg / Kg / d For 4 w.

(3) Itraconazole

eg Itracon
Itrazona

Continuous 3 - 5 mg / Kg / d for 4-6 w

Pulse: 5 mg / Kg / d for 1 w

Repeat (4 w)

(4) Fluconazole

Every day: 8 mg / Kg / d for 6 w. (6-6)

Every Week: 8 mg / Kg / w for \approx 16 w. (8 For 16)

فعلينا ان نستخدم الاثيرين و فلوكونازول
وليس ايتراكونازول لان ايتراكونازول لا يجرى
في الدم

يجري Itraconazole و لكن لا يجرى في الدم

Triple therapy

Kerion

Systemic Cs: 1 mg / Kg / d for 2-3 w.

Septin for 10 days

Griseofulvin for 6-8 w.

Griseofulvin not act e infect. (فلاي)

(15)

(19)

T. Faciei

(7)

Dermatophyte inf. of glabrous skin of the face (non hairy)

Site

♀
Children

Onl area of Face

Adult male: Facial Areas other than beard & Moustach.

C/p:

(1) T. Corporis like: (Annular) ←

(2) ECZema / ps. like (Non Annular Erythematous, scaly patch).

DD:

(1) Dermatitis:

- Seborrheic
- Perioral
- Contact

(2) Rosacea

(3) L.E

(4) psoriasis

(5) AV.

T. Barbae

Def. Dermatophyte inf. of Beard & Moustach of postpubertal Men (Post Pubertal)
(ملا لا يقب, لا يقب, لا يقب)

C/p

Varieties: ٣

Walo Hair loss

1- T. Circinata like.

2- Bact. Folliculitis like.

3- Kerion like.

4. Verrucous (HIV)

5. Lupoid Syphilis (LV like)

Anthropitic (mild)

Zoophilic (Severe)
(المرضى دائما يبقون)
(قلع)

DD:

1. Bact. Folliculitis

2. Viral ~

3. AV

4. Cervicofacial Actinomycosis

5. Dental Tract sinus

TH

1. Warm Compresses

2. Hair Epilation

3. Topical & Systemic Antifungals.

(16)

1 - Cirripates = Circinate

Dermatophyte Inf. of Skin other than

scalp
face
groin
Hand & Feet.

Clinical Types

1. Classical = Circinate: Annular or Seborrheic Patch

Clear center & Active Edge ±

raised, scaly, mildly itchy
→ Anthrophilic
raised, vesicular
Eczematous, severely
itchy → Zoophilic.

2. Psoriasiform = non Circinate.

(ZF) 3. Follicular pustular (Zoophilic) & Favic (Crusted)

Tokelau & 4. Imbricata (T. concentricum)

چوبه چوبه - چوبه چوبه



5. Concentric ring (T. rubrum).

5. Dermal = Majocchi Granuloma

نکته

Fungal inf of hair follicles.

Fungal (T. rubrum) Folliculitis & Perifolliculitis →

Rupture into dermis → Granulomatous Inflamm.

What is the Majocchi dis??

may affect:

♂: used Topical Cs on Top of Dermatophyte inf. Wk at Wrist.

♀: who shave frequently & having Tinea pedis (T. rubrum) Wk at Shin & tibia.

Clinically: Circumscribed Patches & Indurated plaques ± follicular & perifollicular pustules & nodules 3-4 mm, Scarring.

Organism: Commonest: T. rubrum, Microsporum. 2nd common: T. violaceum.

- At. Rosacea, ps & LP
- Impetigo & HT
- Discoid Ecz
- MF
- S
- EM & urticaria
- LE
- GA
- LV
- Leprosy
- Sarcoidosis.

DD: Circinate lesion نکته

• HT: Same regimen of T. Cruris.

T. Cruris (Crutch, Jock itch) (21)

Def. Dermatophyte Inf. of Groin, Inner thigh & Interdigital cleft.

predisposing factors :

- ♂ - obese - Excessive perspiration
- ↓ occlusive effect of scrotum
- ↓ Moisture & Friction

CIP { Early: Itchy Erythematous Patches
late: Well defined circinate or Serpiginous lesions.

• Scrotum → rarely affected

• lichenification may occur

- causative organism { Dermatophytes: ++ → (T. rubrum & floccosum)
Copathogens: Candida & Bact.

• DD → Intertrigo (inflammation of Flexures or folds).

DD of Inguinal Lesions	
1. Tinea cruris	
2. Candidal intertrigo	
3. Bacterial intertrigo	
4. Erythrasma	
5. Seborrheic dermatitis	
6. Flexural psoriasis	
7. Contact dermatitis	
8. Hailey & Hailey disease	
9. Flexural Darier's disease	

↑ ای صیغہ T. Cruris ← در (عددی مع لیس) T. pedis

Treatment

A. علی: ↓ weight, تجفیف کلبہ صیغہ + (Ht of T. pedis) (تدریجاً)

B. Medical: Topical & Systemic { Griseofulv. → ♂
 Lamisil → 2w.
 Itracon. → 1x2x7d.

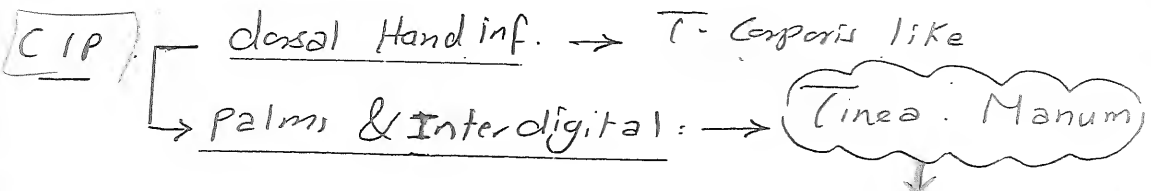
C. prophylactic (لا نفاطاً یترفع)

نیروال شامبو تیرت الرخوة ۱. دکانم
 ثم یطین ۲-۱ مرات کل یوم.

Tinea Manum

(22)

Def dermatophyte infection of Hands (Palms Not dorsal Hands).



dorsal hands
T. Corporis

- organism: as T. cruris, Pedis & Corporis
 (T. rubrum, Microsporum, & E. Floccosum)
- usually Non inflammatory & often unilat. (≅ 50% unilat & 50% Bilat)
- Moccasin T. pedis: often ass. e
- T. manum → Two feet & one Hand Syndrome
- Clinical Varieties:

- ① diffuse Hyperkeratosis (Housewife ECZ. like) & Scaling.
- ② Exfoliative مجرد تقشير الجلد فقط
- ③ Vesicular.
- ④ Papular.

Clue that may Help in D:

- ① infection may start at the finger ring or under watch strap then → Spread.
- ② Presence of T. unguium.

off 250 mg 2nd day 2nd 250
Itraconazole 1x1x2w-6 w.
 (OCA) or 1x2x1w
Griseofulv: 0.5-1gm b
 for 4-6 w
Fluc: 11w for 4-6 w

- DD: 1. ECZ.
 2. ps
 3. dyshidrosis
 4. dermatophytid reaction

So → • Scraping & KOH
 • Culture
 • Biopsy.

(Toe web infection) T-Pedis (Athlete's foot)

4 types

Topical only

① Interdigital types : Copathogens
(Lat. 3 Toes)

1st → 2nd → 3rd → 4th → 5th

Dermatophyte
Candida
G-ve
(Pseudomonas)
Corynebacteria
usually present

• white, sodden, macerated, or erythematous webs of Toes.

Topical + Syst

② Scaly Hyperkeratotic (Moccasin type)

• limited to thick skin of sole (Heel, sole, well)
& may affect the border (Heel & fore foot)

• patchy or diffuse silvery scaling + erythematous

• Minute vesicles → Collarette < 2mm

• chr. & Resistant to H

Chronic → fix systemic

③ Vesicle bullous : (Acute)

Topical antifungal
Topical CS
Syst. antifungal (maybe)

Lesion

Tense Vesicles
Vesiculopustules
bullae

at 2nd

Plantar arch

Sides of Heel & feet

(thin skin)

④ Acute ulcerative : Dermatophyte + G-ve

• Severe ulceration
• Cellulitis
• Lymphangitis
• Fever

Complications of T-Pedis:

1. Bad odour of feet (Olfactory)
2. Cellulitis & Lymphangitis
3. "Id" Reaction
Allergic reaction
4. Recurrent T-Pedis

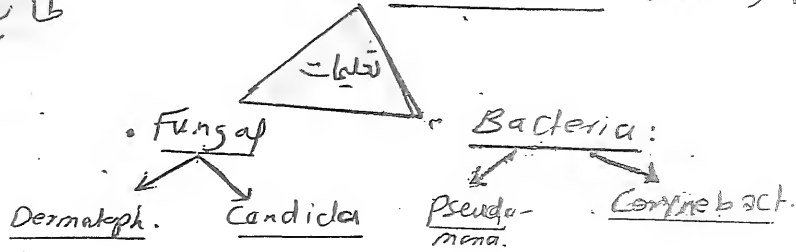
The commonest organism: T. Rubrum

Treatment < other types: fix → systemic

طایفه دیجیتال پا (Digital pedal)

T. pedis

Hyperhidrosis (usually present)



تعلبات
 زخم در محل کوبش
 به آلودگی
 در وقت حمام
 (Attention)

Hyperhidrosis: Alum. chloride 20% in Alcohol

- ↓ sweating
- ↓ moisture
- antiseptic

Fungal: Best: Lamisil Cream & Potassium sol.
 or
 Troxyd powder

G-ve (Pseudomonas) < Castellani's paint
 0.25% acetate (عصاره)

Add for Topical (##) < Dermacure (Keratolytic) for
 Cs (Lotriderm) Scaly Hyperk.
 Vesicle bullae.

Systemic (H)

Griseofulvin: 2-4w

Sporanox: 1 Caps 1d for 1m
 or
 2 Caps 1 day for (2ws)

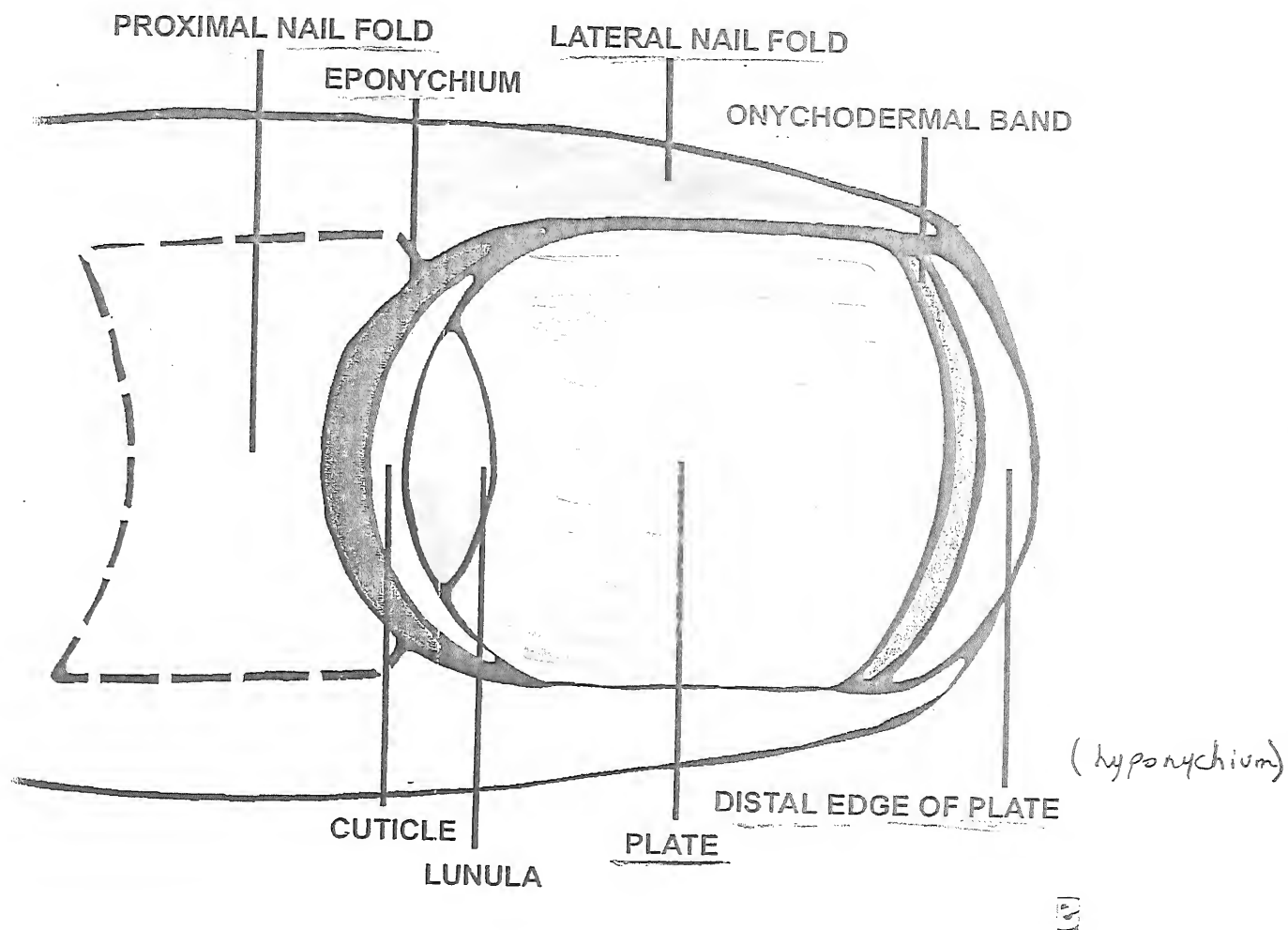
Lamisil: 1 tab (250mg) 1 day for 2ws-6ws

Flucan: 1-2 Caps 1w for 4ws-6ws

24

ONYCHOMYCOSIS

(Simple introduction to nail anatomy)



Onychomycosis (COM) (2010)

Def. ^{any} Fungal Infection of Nail Plate, Bed or Matrix, caused by

1. Dermatophyte moulds,
2. non " moulds or
3. Candida.

Note: Tinea unguium is "dermatophyte" infection of Nail _{only}

Q. difference bet. onychomycosis & T. unguium??

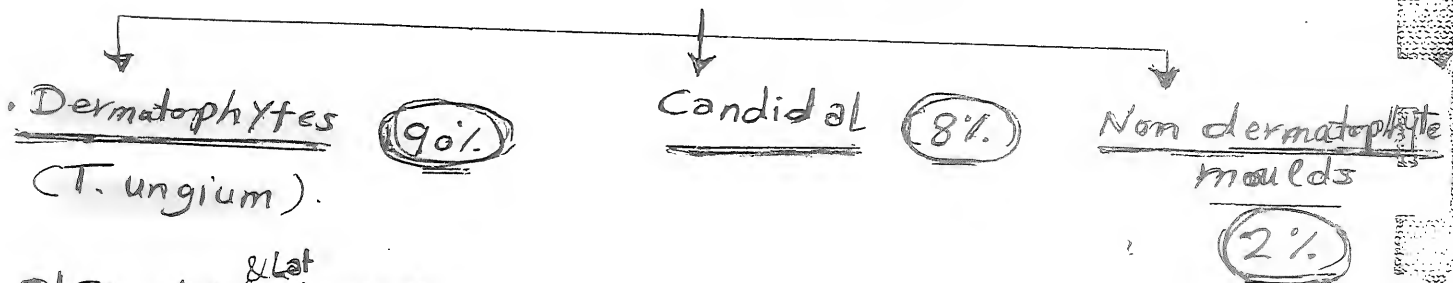
AET ① UK & USA $\xrightarrow{\text{Little}}$ Dermatophytes ($\sigma > \rho$)
 ② Middle & Far east $\xrightarrow{\text{Little}}$ Candida. ($\rho > \sigma$)

Epidemiology:

- usually affect the Toe Nails (80%) > Finger Nails
- Toe Nail onychomycosis is usually d.t T. pedis
- Risk group:

- ① old age > 60 ys.
 - ② Smoker.
 - ③ ImmunoCompromised e.g HIV, CS & DM.
 - ④ peripheral vascular dis = (pvd), ⑤ Hyperhidrosis & T. pedis.
- Age Any but more in elderly & adults.

Classification: According to the organism:



1. DLSO (distal ^{& Lat} subungual)
2. PSO (proximal ")
3. WSO (White superficial)
4. ENO (Endonyx)
5. DYSTROPHIC O. M
6. FAVIC (see T. Capitis)

Dermatophyte onychomycosis

(T. unguis)

(27)

Types

1- Disto. Lat. subungual OM (DLSo) (T. rubrum)

- Commonest Type in ImmunoCompetent
- Infectⁿ starts at Keratin of lat. & for ^{fold} distal Nail bed (Hyponychium) → Nail bed,
Nail plate & Matrix Inf. → :

- discoloratⁿ
- Ridging
- Thickening
- Subungual Hyperkeratosis
- onycholysis ← (separation of nail bed & plate)

Accumulation of Keratin under nail plate

2- proximal subungual OM (PSO) (T. Mentagrophytes)

- Commonest Type in — ImmunoCompromised (HIV) & Candidal Inf.
- Inf starts at proximal Nail fold Keratin → enter through Cuticle → Under Surface of Nail plate & Nail bed then Matrix

- CIP: leukonychia : single or Multiple, Transverse over the lunula

- Subungual Hyperk ←
- proximal Nail plate destr. & onycholysis
- Intact, smooth dorsal surface of !! plate

3- superficial white (SWO): (T. Mentagrophytes)

- rare
- Invasion starts at dorsal surface of the plate
- CIP: Leukonychia (speckled, friable, well defined) → white crumbled plate

4. Endonyx: (T. Soudanensis)

- infects starts bet. Nail plate lamellae;

So $\left\{ \begin{array}{l} \text{No Bed affect} (-Ve InV.) \rightarrow \text{No Subung. Hyperk. \& onycholysis.} \\ \text{No dorsal plate affect.} \end{array} \right.$

- Clp: Leukonychia.

5. Total dystrophic OM (TDam) (extensive)

- Total destruct of all Nail units.

- represent the end stage of other types (Except in CMC \pm 1ry).

organisms of OM :-

- T. rubrum (70%) the Commonest \rightarrow also

- T. Mentagrophytes (20%) Common in WSO)

- Epid. floccosum. (1%)

1ry Invasion \rightarrow 2ry II \checkmark

Candidal OM (8%) \rightarrow أشرف في شدة

Candidal Paronychia \rightarrow Candidal OM (thickening, ridging & Beau's lines onycholysis)

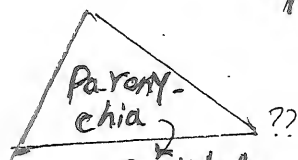
Non-Dermatophyte Mold OM (2%)

organism: **Aspergillus** [Scopulariopsis brevicaesp.], **Hendersonula** [Scytalidium & Fusarium]

✓ Affinity to inf. diseased (Dermatophytic) & Aged Nails

Clp: As Dermatophyte OM but suggestive Fracture features are:

1. PNF \rightarrow affect \propto Transverse plate
2. Lat. NF \rightarrow Cheesy material & Burrow
3. Brown discoloration of subungual Hyperkeratosis



- Candidal
- Non-Dermatophyte Mold.

\rightarrow Nail fold affection

NB

(31)

بدون تشخیص مایکروبی - 2/1/14

No # of OM
Recent investigations

1. Specimen Collectn
2. KOH exam.
3. Culture
4. HP
5. PCR

Specimen Collectn
(مجموعه نمونه)

Cleaning the Nail
(پاک کردن ناخن)

then
سپس

Scraping: the subung. Hyperk. as proximal as possible (معمولاً)

clipping: نقصه کردن سر ناخن

drilling: حفه زدن در لبه ناخن
با استفاده از Punch

آنها را با اجزاء سفید عکس آنفل
Keratin / Fungus

Direct KOH
exam + stain

Specimen + 10-30% KOH
left for 24 hrs
then either
Heated (50°C for 1 hr)
or DMSO Addn > 5 min

Sensitivity: 50-80%

Good screening Test.

NB: Chlorazol Black E
stain (رنگ آمیزش)
Hyphal stain

Culture

Sensitivity
(25-80%)

the most sensitive
(80-90%)

Can do any Nail dis.
Can do Type of Inf.

With Cyclo-
himamide
Actidione

[Mycosel or
Dermatophyte
test Media]

Isolate Dermatophyte
only (--- Candida &
other molds)

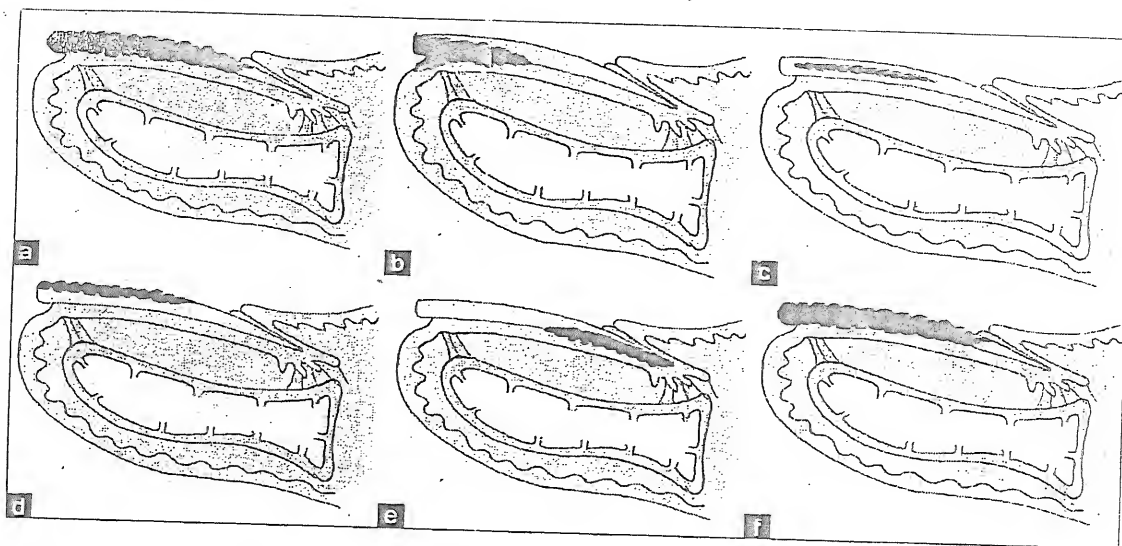
Without
Cyclohimamide
Sabouraud's
agar

Isolate
Yeasts &
Non Dermatoph.
Molds

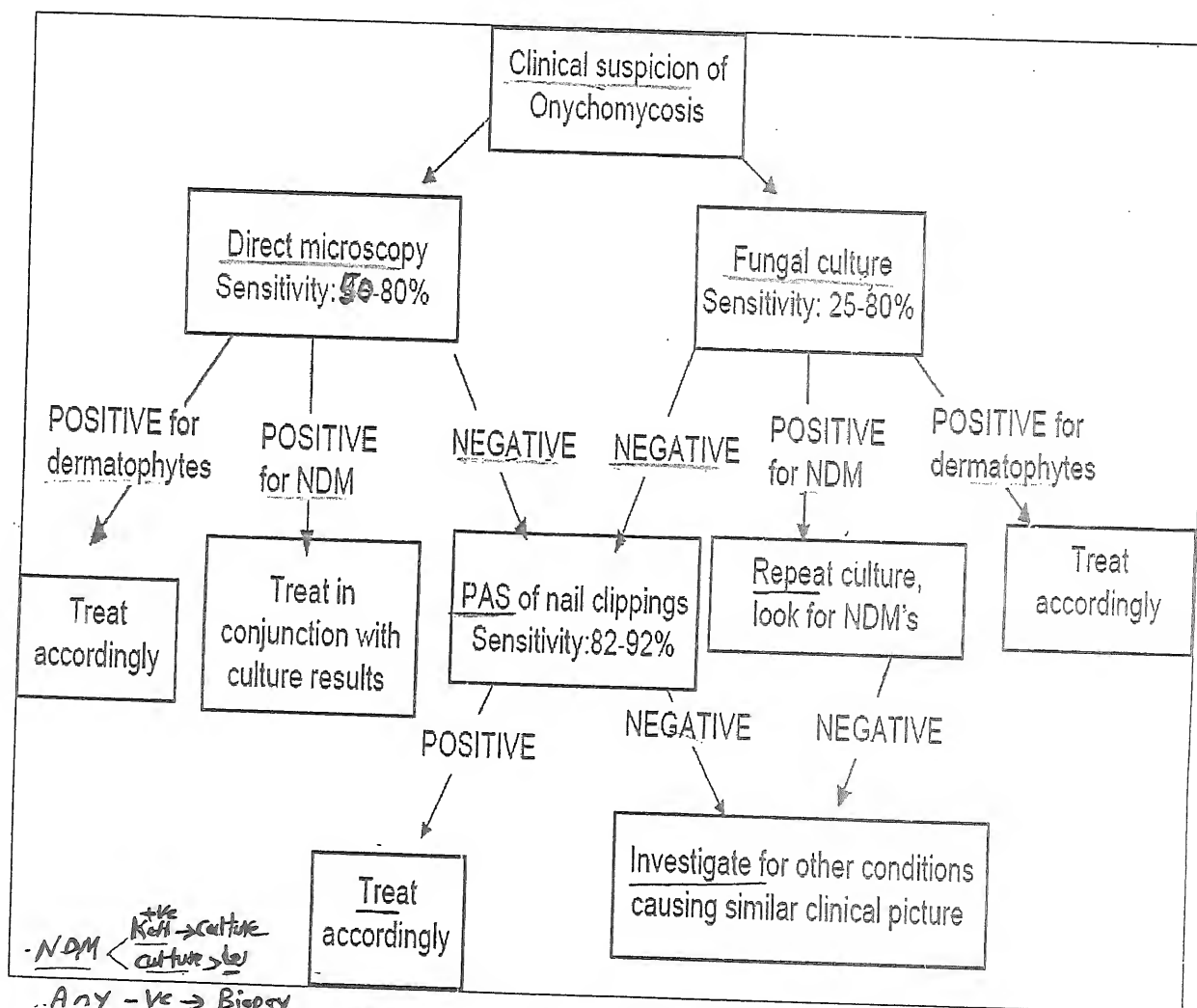
NB

KOH → rapid & sensitive
Culture → determine the pathogen
but delayed (ds - vs)
HP → Rapid & Very sensitive

DD of onychomycosis?



Pathogenesis of Onychomycosis. (b) Pattern of fungal invasion in distal lateral subungual onychomycosis. (c) Pattern of fungal invasion in endonyx onychomycosis. (d) Pattern of invasion in superficial white onychomycosis. (e) Pattern of invasion in PSOM. (f) Fungal involvement in a case of TDOM



Treatment of OM

طالعات محددة *Topical*

Systemic

بلاستيكية *Surgical*

- PDT

- Laser

- Prevention of recurrence.

Indication:

1. Mild inf. < 50%

DLSO (Very distal cases involve < 1/2 Nail)

WSO No Matrix affect

2. Adjuvant with systemic

3. Contra indication of // e.g. hepatic, pregnant

4. prevention of Recurrence (Maintenance).

NB: it has mild effect (d.t) Poor penetration.

the following are the only effective

1. ^{olamine} Ciclopirox (8%) in Nail Lacquers ^{نوعه دواء} ^{battchen int.} ^{liposome} ^{↑ penetrat}
2. Amorlifin (5%) in Nail Lacquer: ^(Allylamine)
3. Naftifen (Exodril lotn) ^{من مرتين يومياً}
4. Biofenazole 1% / urea: 2 phases: ^(Biofenazole) ^{MYCospore}
 - A. 2 wks: MYCospore + urea 40% ^{دواء يغطي طلع ٢ ساعة ثم يتم كبت إصبعها فريدير طلع اسبوع}
 - B. 6 wks: daily MYCospore
5. Trosyd Nail sol. (28%) or (Fungibacid)®

NB: Ciclopirox (8%) in Lacquer →

نوعه دواء مستخدم بدلا منه Ciclopirox 8% in Liposome (نوعه دواء)

FDA (2014):

5%

1. Tavaborol (Kerydin)® 10 t.

2. Efinaconazole 10% (Jublia)® → once daily

1- Ketoconazole & Griseofulvin:

Not used in XX

- Low efficacy
- Many S.E
- Prolonged duration
- High Relapse Rate

" 1-2 gm/d until become NL "

inv. for liver

- Need Continuous Lab. monitoring

2. Fluconazole

ss (لا يستخدم) XX

- effective against all organisms
- 1-3 Caps / w for < 6ms Finger Nail inf. 9ms Toe Nail.
- (Not) FDA approved & No sufficient studies.

(FDA) approved

3. Terbinafine & Itraconazole:

- the Main & the most effective in HT of OM.

Terbinafine (daily)

Itraconazole (pulse)

- dermatophytes (good)
- Non Molds (+)
- Yeast

Effective against All

Derm. (Terbinafine)
Non dermatoph.
Candid

Finger (or) Toe Nail

(12)

Because Most Cases are dt Dermatophytes

Terbinafine is more effective

Cost effective - than Itraconazole.
Less S.E
less interaction.

Lamisil® More better than **Sporanox®**

- if OM is Candidal or non Dermatophyte molds → Sporanox Preferred.

الزاي تفرق

The most effective Regimens:-

(35)

①. Terbinafine
 Continuous: 250 mg/d For < 6-8 wks
 pulse: 500 mg/d For 1 week → Rest 3 wks → Repeat for 3-4 pulses.

②. Itraconazole
 Continuous: 100 mg/d For 3-4 ms
 pulse: كبولة صباحاً + كبولة مساءً

Finger: 2 pulses
 Toe: 3 pulses
 ← لفة مبدع ← لفة 4 أسابيع ← تكرار الجرعة

③ Sequential Pulse: one Itraconazole pulse 3 wks → Terbin. pulse.

NB

Continuous Lamisil ✓ → أفضل من Pulse.
 pulse SporanoX ✓ → أفضل من Continuous
 The most effective Courses: بالترتيب

- ① Continuous Lamisil → الأفضل في الإطالة و المفعول
- ② Sequential
- ③ pulse Lamisil
- ④ pulse SporanoX
- ⑤ Continuous "

"continuous"

* LFT
 * RFT
 * CBC → When using Lamisil or SporanoX: For > 1m → do Routine LFTs, BUN, S.Creat. & CBC lamisil

عند بداية → When using Pulsed Lamisil or SporanoX: LFTs indicated

- Hx of liver dis.
- AbNL base line LFT
- S. & S. suggest Liver impairment.

Surgical tt (Nail Avulsion)

(36)

• Surgical Avulsion
دواء للجراحة

• Chemical Avulsion
ممكنة تقطعها

Urea 40% → توضع على إصفر
وينتظ لمدة (أربع - ١٠ أيام) ←
Curettage by bone spatula

• Avulsion: is a good adjunct tt

Combination of: Topical + systemic + Avulsion

Best Results

&
• don't forget to follow up for Recurrent
Pedis

① Laser tt of onychomycosis:

- Type of laser: Nd-YAG or Fractional CO₂, Diode 980
- Mechanism
 1. direct fungal killing by heat
 2. Selective photothermolysis: absorption of Laser by Melanin of T-rubrum
 3. Creation of columns (by fractional):
 - direct fungicidal effect.
 - facilitate penetration of other drugs.

- فداعا انعود :
- ①. investigate before tt initiation (Biopsy ~~جس~~)
 - ②. use: Continuous terbinafine + Topical + Avulsion

Candidiasis (Moniliasis) (38)

Def: Dimorphic organism that present into 2 forms:

- ① Commensal (Yeast) form in
 - GIT
 - Vagina & Rectum
 - Mucocat. areas
 - Intertriginous areas.
- ② Pathogenic (Mycelial) form.

Types (> 150) Urine (المفرغ من البول)

Most

- ① Albicans (Commonst 8%)
- ② Tropicalis
- ③ Pseudo tropicalis } (20%) (Vagina فيس)
- ④ Krusei } Albicans
- ⑤ Glabrata (No pseudo hyphae) } Glabrata
- ⑥ Torulopsis.

Predisposing factors for inf: "آف"

① Lack of Bact. flora:

- Prolonged antibiotics.
- Neonatal Mouth فم المواليد
- ↑ Glucose in Saliva & fluids → bact. will Not -- Yeast (as in diabetics)

② Local tissue damage: (break of surface epith)

Wearing < denture
Tight Nylon

- Continuous Friction
- chr. maceration, Moisture
- Humidity, Excess Water Exposure.

Immuno-
Supp. II

③ ↓↓ CMI: Leukemia, Lymphoma, HIV, Cushing & DM

④ ↑ Serum Transferrin in Newborn Leukemia → ↑ Fc level → ++ Growth

⑤ Pregnancy & OCP: ↑ oest. → ↑ Glycogen → ++ growth.

(Toe Web inf.)

pruritic, markedly macerated lesions & white scaly borders.

Commonly: bet Ring & middle fingers (dit common tendency)
Es - V bact: may be Co pathogens

Diaper (Napkin) Dermatitis

→ DP

Irritant Napkin Dermatitis

Infant: 6-12 ms (تحت الحفاية)

Adult: if there is incontinence

2 Factors → Diaper
Wetness (Feces & Urine & their enzs)

Dermatitis →

1. Erythema

2. Erosions

3. Ulceration & Erosion & elevated

4. Dermatitis of Penile tip →

Urinate more frequent &

hematuria

5. Granuloma Gluteale Infantum:

Erythematous - violaceous, ovoid nodules at anogenital area as complication of Napkin D. predisposed by: Cs

occlusive plastic
Pants
Candida

→ Folds are: Free (free)

Usually Colonized by Candida & staph.

→ CD

Cs → Jacquet erosive Napkin
Mebo / Nuprix

Candidal Napkin Dermatitis

chic picture of Candidal intertrigo (see before)

to diff. from irritant Napkin

2F

Folds affected ✓
Forerunners or daughts = satellite

DD of Napkin Rash:

1. Irritant Napkin Dermatitis
2. Candidal " "
3. S.D
4. Psoriasis
5. Acrodermatitis Enteropathica
6. Histiocytosis
7. Kawa-Saki
8. Leiner's dis. → diarrhea chronic

Any case of irritant Napkin Dermatitis should be Colonized & Candida within 2 days

So the H of Both Conditions are the same.

NB on Infantile gluteal Granuloma:

- Self limiting after removal of predisposing factors.
- Path. ranging from non specific to Vascular malformatⁿ resembling K.S

Recurrence is common dit oral & Gut Colonizatⁿ of Candida → Fungistatin oral

1x2 ap

Pseudo verrucous papules & Nodules. entity in children & urostomies & encopresis that has feature similar to infantile glut. Granuloma.

1

Thrush

- Commonest form of oral C.
- usually affect: ① Newborn: from infected Mother
② Child & Adult: Antibiotics & Immuno-supp. e.g. HIV
- Well defined creamy white patches (Pseudomemb) on buccal Mucosa, Tongue, Gum
- When Removed → Eroded erythematous base.

There is a relationship between ↓ CD4 count, oral thrush and ↑ rate of progression to AIDS

< 3

2

Angular Cheilitis (Stomatitis): Perleche

- macerate & Transv. fissures at oral Commissures.
- AET → Excessive wetness or dryness often complicated by staph. & candida

فقر حديد
انيميا
فقر بروتين

• Main factor: excess wetness or drying

1. ill fitted denture
2. Lollipop cutters
3. Senility
4. Net look (for acne) → drying SE

Complicated by Candida, staph & strept.

Other Contributing factors

1. Riboflavin def
2. Fe & folic acid def
3. HIV/Down
4. Anorexia Nervosa

##

- 1 - Cause Removal (فصل)
- 2 - Nystatin + Idochlorhydroxyquin (Virgim) in hydrocortisone → effective
- 3 - Mupirocin: if staph.

(علاج الفم) (Saliva) دكتور كرميل قبل النوم + Dakta Cort. Cream

نظف الفم جيداً (نظف) 1 (2.0) → اعمل علاج

3

Candidal cheilitis: → as angular ch. but affect Center of lower Lip.

4

Acute Atrophic (Glossitis): Sore, Tender, Red beefy Tongue

affect Elderly Taking (CS or antibs)

5

chr. Atrophic (Denture Stomatitis): patch of Erythema in denture Wears.

6

chr. Hyperplastic (Candidal Leukoplakia):

من بيضا الى بيضوية

- White, adherent, firm plaques (doesn't rub easily (as thrush))
- affect smokers
- ?? Mg Transformatn

7. Black Hairy Tongue:

(13)

6

- Oral Candidiasis in HIV
1. Erythematous "atrophic".
 2. Pseudo-membranous
 3. Hyperplastic →
 4. Angular cheilitis.

Aet + Candida
Antibiotics.
Smoking.

Site Ant. $\frac{2}{3}$ of Tongue.

C/p patches ^{yellow,} _{brown, or Black} with "hair like inter-wining" ^{filaments}

Path Bg hyperplasia of Filiform Papillae & ortho-Keratotic & parakeratotic "Cell Retention" → hairy appearance.

Oral Hairy Leuko plakia (C/L = HIV) others Behcet ulcerative colitis

Def: EBV inf. of Tongue of HIV patients & Renal Transplant.

Site: Lat. edge of Tongue ^{Smoker's Tongue}

C/p: Corrugated, Vertically placed, Whitish plaques that can't be Rubbed off. (ASympt)

(Treatment)

Black Hairy Tongue:

- stop predisposing factors ^{Smoking AB}
 - Retin A
 - 40% Urea
 - 1-2% H2O2
- In mouth brush

Oral Hairy Leuko

- ⊙ HART
- ⊙ ACV, VCV, GCV
- Zidovudine
- propylthiouracil
- Tretinoin
- Excision
- ⊙ Gentian Violet

فرساة اللسان على لسانه

Genital Candidiasis

Male

(2 forms)

Female

• Vulvovaginitis

• scanty,
Thick,
White, Cheesy
discharge.

• PH: NL
(4-4.5)

[white in Trichomonas
iti > 5]

• Dysuria &
Dyspareunia

- dysuria
- dyspareunia
- severe
pruritus.

Recurrent > 3/y

• Balanoposthitis

Inflamm. of
Glans & prepuce.
usually involving
the coronal sulcus.

• Allergic Form

• Allergic reactⁿ
of the partner
from infected woman:

(itching, Burning,
Vesicles, Erosion)

بعد اتمام علاجه
Dramatic response

• Hydrocortisone 1%
characteristic

Recurrent Genital

Candidiasis is > 3
episodes / y.

کبیرہ فلوکروان کل ہفتے
۱۶ گھنٹہ
۱۶ گھنٹہ
۱۶ گھنٹہ
۱۶ گھنٹہ

NB: ∴ Resistant inf in ♀ may be caused by C. Torulopsis &
Not Albicans → resistant to Azole Antifungal but
responsive to: Boric acid lotⁿ - Amphoterecin - Fluocytosin
• Treatment of Genital inf in ♀:

1- Systemic: - Flucanazole 150mg
- Itraconazole 100 (P.V.I.X. 100 mg)
- Ketoconazole: 1K 1x10 days

2. Topical: • Miconazole: 1200mg Vag. tab single dose (میکونازول)
(MBC) • Econazole: 150 / Night for 5 ds
• Clotrimazole: 100 mg / N. n 7ds.

Genital Syst

hidden areas
as perianthine glands

Affect Patients =

Leukemia : source of Candida is Gut ✓
Addicts : " is IV ✓

Δ Triad of

- ① Fever
- ② Diffuse muscle tenderness
- ③ Erythematous papulonodular lesions ± pale center

// NB //

① Cong. Cut. Candidiasis:

S.D. : eosinophils
TN :
Transient Neonatal
mucocutaneous
infection (TNM)
↓
Neutrophil
subdiagnose
All

- starts few hours after birth d.t PROM & intrauterine
Candidal inf. from infected birth canal
- Maculopapular Rash → Vesiculopustules → desquamate
& Resolution. Sparing the Napekin & oral areas
(unlike the Neonatal inf.)

② Candidid = Moritids = Candida allergic Reactn

Reaction to
underlying
Candida

± inform of: ① - Eczema of Hands, feet & Trunk.
② EAC.
③ chr. urticaria. (.. 3x)

④ disease of skin neonate within 1st 48h of life??

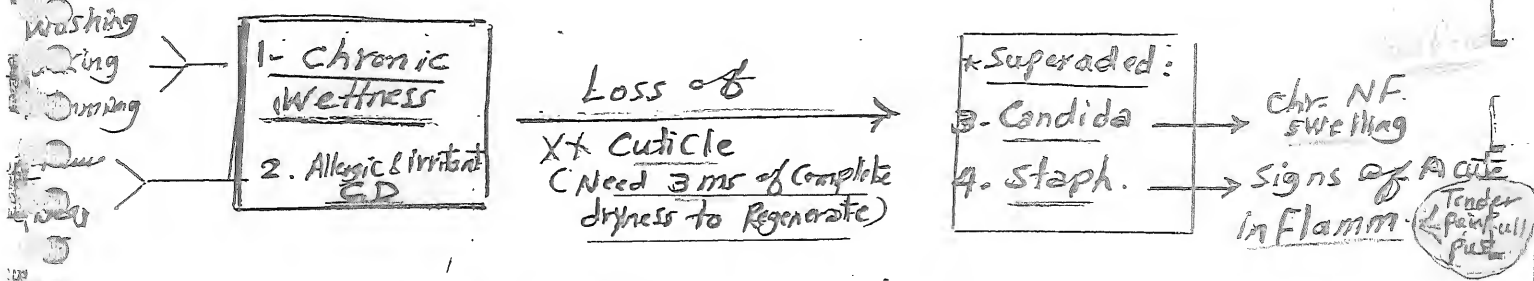
- ETN
- TNPM
- Cong Cut Candidiasis

Candidal Paronychia

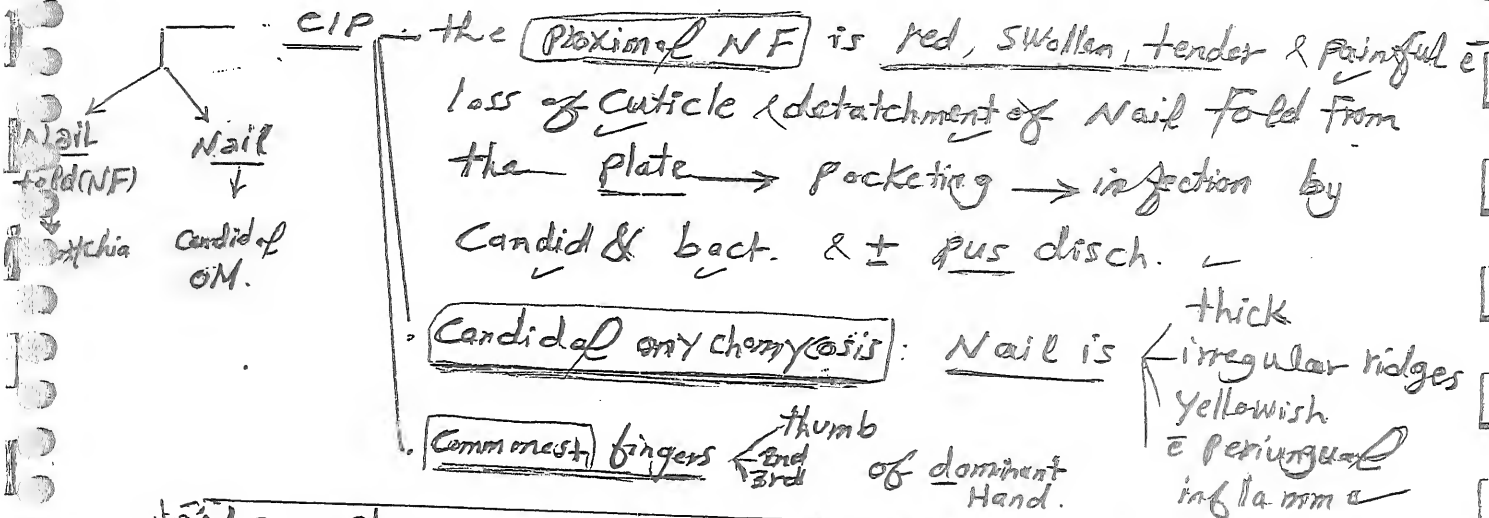
(Chr. Paronychia)

(47)

Recently: chr. paronychia is an inflammatory disorder of (PNF) proximal Nail folds of finger. 4 Factors



in recent study: topical Cs more effective than systemic anticandidal (arg)



Step 1: Chronic Water exposure & irritants → macerates Cuticle → infect by bact. & Candida

* Ht → 3 aims: 1. avoid Trauma, Water & irritants; 2. suppress Inflammation (CS); 3. Candida & Bact. (CS). Arabic note: الجراحة، المضاد للالتهاب، التريخية: Thymol 4ml + chloroform to make 25 ml.

Combined Cs + Antifungal: Lotriderm or Pivisone C if failed systemic antifungal

* NB on NapK in Dermatitis:

Recurrent cases ?? d.t Candidal Colonization in Gut so give oral Nystatin suspension

Arabic note: oral Nystatin Daktaent 1x2 Zincosil → (physical barrier for urine) (39)

Chronic Mucocut. Candidiasis

48

Def: Heterogenous group of disorders ch by severe, progressive, & recurrent inf. of skin, MM & Nails by C. albicans d.t defective Immune system against the organism.

Etiopathogenesis: $\left\{ \begin{array}{l} \text{Genetic} \\ \text{Immunodef.} \end{array} \right.$

1- defective T cell defense against Candida "Specifically" & \pm other organisms; the defect is ass. with:

Candidal Polysaccharide \rightarrow \downarrow IL2, IL12 & NK (Th1) cytokines \rightarrow immunosuppression.
 \uparrow IL6 & IL10. (Th2) \rightarrow series.

2- Genetic: d.t AIRE gene mutation (w encodes DNA \leftarrow expressed in Thymus \downarrow prevent autoimmune dis.
 Transcription Factor) \rightarrow Autoimmune diseases.
 (Autoimmune Regulator E gene)

Epidemiology: \downarrow mean (3 yrs)
 ① Age: usually < 6 yrs (adult onset may Herald thymoma).
 MG or BM abnormalities.
 ② FH: may be -ve or +ve (in APECED usually AR).

CIP: 1- Skin: \rightarrow Crusted, granulomatous, Horny plaques usually at face (Acrofacial), scalp & flexures but \pm Generalized.

\uparrow Hypertrophic \uparrow site 2- MM: \rightarrow ① oral thrush & Hyperkeratotic plaques.
 ② Chr. lesions on Esoph., Larynx & Genital mm.
 \rightarrow Stricture. (مباينة)

3- Nails: \rightarrow Thickened, dystrophic & Paronychia.

Also: ① Severe recurrent bact. Septikemia.

② Systemic Candidiasis.

③ others: Warts, Dermatophytes, AA, SD, recurrent Aphthae.

$\left\{ \begin{array}{l} \text{SD} \\ \text{AD} \\ \text{Alopecia} \end{array} \right.$

(49) 12

Types of CMC (all types affect children EXCEPT Type 4):

- ① AR CMC: : mild Affectⁿ, Improves w Age.
- ② AD: Severe affectⁿ ass w other types of Inf.
- ③ Idiopathic: severe affection (ass) with systemic Inf. & Bronchiectasis.
- ④ Late onset: occurs in Adults; May Herald Thymoma, MG or BM --, SLE or HIV

⑤ Candidiasis Endocrinopathy Synd. (APECED)

APECED

may consist of at least 2:
 - CMC
 - Addison's
 - Hypoparathy.

AR, AIRE Mutatⁿ

at 5 Ys (but Endocrinopathy is late at teenage or adults).

Associated Conditions:

Autoimm. Endo. Cut. disord.

A. Autoimmune-endocrinopathies:

- 40% → Hypoparathyroidism
- 60% → Addison
- 30% → Both
- 45% → Hypogonadism
- 15% → Thyroid disorders.
- Hypopituitarism.
- DM.

B. Autoimmune cut. disorders:

- AA, Vitiligo, LE like
- Panniculitis.

C. Other autoimmune disorders:

- Pernicious anemia & CAH.

D. Other ass. conditions:-

- Malabsorptⁿ.
- Chr. diarrhoea.
- pulm. fibrosis.
- Enamel Hypoplasia
- Antithyroid antibs.
- + Rhoid factor.

⑥ CMC ass w:

- ✓ Keratitis (as KID synd).
- ✓ AEP
- ✓ Iry Immuna deficiency.

- CARD9 ass. CMC: CARD9 Gene Mutatⁿ ^{oral} Vulvovaginal
- Dectin 1 deficiency: Vulvovaginal Cand. & onychomycosis.

Candidal organisms are confined to the stratum corneum and are demonstrable in scrapings and cultures. Approximately 70% of patients have direct evidence of an immunologic defect, including decreased lymphocyte proliferation in vitro, impaired cytokine production and absent delayed-type hypersensitivity (DTH) to Candida, as well as non-specific findings such as abnormal leukocyte chemotaxis or phagocytosis, depressed IgA levels, and complement dysfunction. These heterogeneous immune abnormalities reflect the variety of underlying clinical disorders. Candidal polysaccharides may act as serum factors that inhibit the immune response, and, in some patients, DTH to candidal antigens has been restored after antifungal therapy^[14].

Differential Diagnosis: systemic Antifungals
↑ CMI: Hematopoietic stem cell transp., Fetal Thymus graft, leukocyte Transfusion.

Treatment: Patients with CMC do not respond well to standard topical medications, and the cutaneous granulomas are especially difficult to treat. Most patients benefit from long-term therapy with systemic antifungal agents such as itraconazole, fluconazole and terbinafine. Attempts at immune enhancement are usually ineffective, although transfer factor may be beneficial to some patients with defective cell-mediated immunity. Hematopoietic stem cell transplantation, fetal thymus grafts, and leukocyte infusions have been utilized in patients with severe immunologic deficiencies. Patients should be evaluated at least annually for the development of endocrinopathies, particularly if there is a family history of CMC or APECED.

Diagnosis of Candidiasis:

① KOH Exam: → Yeast cells, Pseudohyphae & Hyphae.

② Culture: on Sabouraud agar (no cyclohexamide) (1-3ds)
 → Creamy, mucoïd, moist colonies. MC "clusters of budding"

Chromogenic Agars

① C-ID agar - C. → Blue
 other Yeast → White

② Chromagar - Albicans → green
 Tropicalis → blue
 Krusei → pink

③ Pathology: - subcorneal pustules

- Yeasts in st. corneum (PAS) & dermis.

- CMC → Hyperkeratosis, Parakerat, mixed infect.

④ Other tests:

(i). Candidal prick (intra dermal) test.

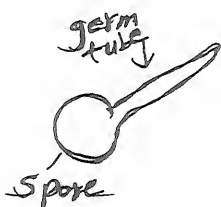
(ii). CMC → anti IFN-1α (Recent & Highly specific for APECED & may precede CMC) (2006)

(iii). Serum Tube test → Filamentous serum (2006)

(iv). Commercial Yeast Identification system as API 20c

(v). Serodiagnosis: ppt Abs that attack Mannan.

(vi). Biochemical Reacts: sugar fermentation & Assimilation.



1. Avoid any possible predisposing factors, e.g.
 - a) Better hygiene with drying and increased ventilation of the skin as frequent napkin changes in napkin candidiasis.
 - b) The use of cotton underclothes.
 - c) Open footwear in the toe clefts infections.
 - d) Removal of dentures with careful mouth hygiene.
 - e) Reduction of candidal reservoir in the gut by oral Nystatin (of limited GIT absorption, it acts by direct contact), especially in patients on systemic steroids or cytotoxic agents.
2. Topical treatment: e.g. Gentian violet 2%, Nystatin or Imidazoles for 2 weeks or for a week after disappearance of clinical lesions.
3. Systemic treatment, e.g. ketoconazole or better itraconazole or fluconazole is indicated in cases of CMC, recurrent VVC, paronychia, onychomycosis, immunosuppressed patients or systemic candidiasis.

Treatment of some special forms

1. Genital candidiasis (p. 35 - STDs) ← Topical
systemic
 2. Oral candidiasis
 - a) Nystatin suspension 2 ml (100.000 U/mL) four times daily. It is allowed to remain in the mouth as long as possible before swallowing. Nystatin pastilles (200.000 U) 4 times daily should be dissolved.
 - b) Aqueous gentian violet (1%).
 - c) Systemic oral antifungals may be given in resistant cases.
 3. Chronic mucocutaneous candidiasis "CMC"
 - a) Identification and treatment of the immunological defects, e.g. candida-specific transfer factor or fetal thymic graft or restoration of normal iron stores, or blood leucocytes infusion.
 - b) Prolonged treatment with systemic antifungals.
 - c) Treatment of any endocrine deficiency.
 4. Oral candidosis in HIV
 - a) Fluconazole: 100-200 mg/day for 10-14 days. Relapses are frequent and maintenance therapy is essential 50-100 mg every other day.
 - b) Itraconazole 200 mg once daily, for 3 weeks.
- Resistance to these new drugs:
- IV amphotericin B alone or together with oral flucytosine.

Diagnosis of Fungal Inf.

(52)

11

- 1 Wood's light → سياتش بالتفحص
- 2 KOH exam.
- 3 Culture
- 4 Histopathology
- 5 others

① Direct Mic. Examination:



- 1st → Sample Collection
- 2nd → Mic. Examination:
 - unstained smear
 - stained smear
- 3rd → Interpretation: (وايه للى انت شايقة)

Sample Collection

(أولا نضف بكون ٧٪ وسبيها تنشف)

- Hair: Scaly T. Capitis:

رأس
Hair
stump
عروة

- pluck lusterless, fluorescent hair
- Scrap for scales.

• Black dot (No Hair): → scrap

• Kerion: → hair or discharge.

- Skin (T. Corporis): → scrap from the active border (scrap)

- Nail 1. Clipping: as proximal as possible

2. scrapping for subungual hyperkeratosis (as proximal)

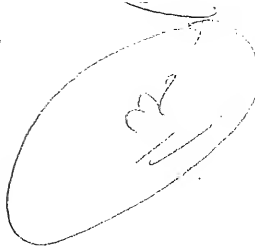
3. Drilling (chiropract's drill = vacuum extract)

- Moist Intertriginous & Muc cut. areas (mouth & vagina):

moist swab = saline

- Toe cleft Forceps skin Epilation.

2 glass slides
 قطع القش الكبير الى صفيحتين
 غطي الصفيحة بـ (Cover slip)
 حط على طرف (11) قطرة من (10-30%) KOH
 انتظ لمدة (30-60) دقيقة
 في حالة عينه الخفاف:



NB: KOH
 Hydrolyses
 protein, fat →
 Clear field

3 وسائل
 Sample + KOH wait for 24 hrs
 Sample + KOH + Heating
 Sample + KOH + DMSO (36%)
 Low power ← إلقاء تحت

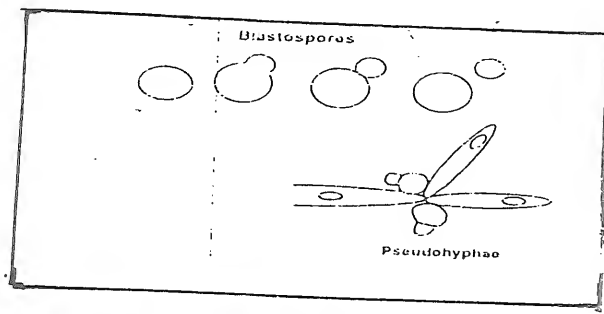
Rapid softening of
 Keratin so will not
 Need to wait for 24 hr.

Then
 Direct exam. (Without stain) or Stained preparation

- * rapid & deep stain : TVC
 - a. Indian Ink → Cryptococcus
 - b. Parker Quinck blue/black
- * slow & light : other stains
 - c. Lactophenol-blue → Blue fungal Mycelium
 - d. Leishmanian or PAS
 - e. Chlorazol Black → for CSF deposits.

(تأشيقا) Interpretation.

- ① Candida:
- Budding (Blastospores)
 - Pseudohyphae
 - True hyphae.

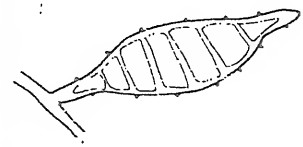
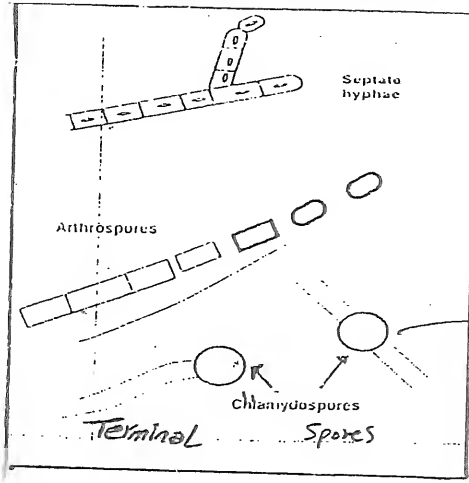


- ③ Hair-Invasion:
- Ectothrix
 - Endothrix
 - Favic

- ④ Artifacts:
- Lipid droplets
 - KOH Cryst.
 - Cloth Fibs
 - Air bubble & globules

- ② TVC → spaghetti & meatball.
 "لحم و spaghetti"

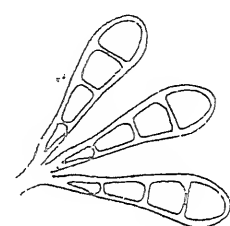
- ⑤ Dermatophytes
 Branching, Septate
 Translucent non-pigment filaments



1. Microsporum
- Spindle-shaped
 - Thick walled
 - Rough wall
 - 5-12 septa



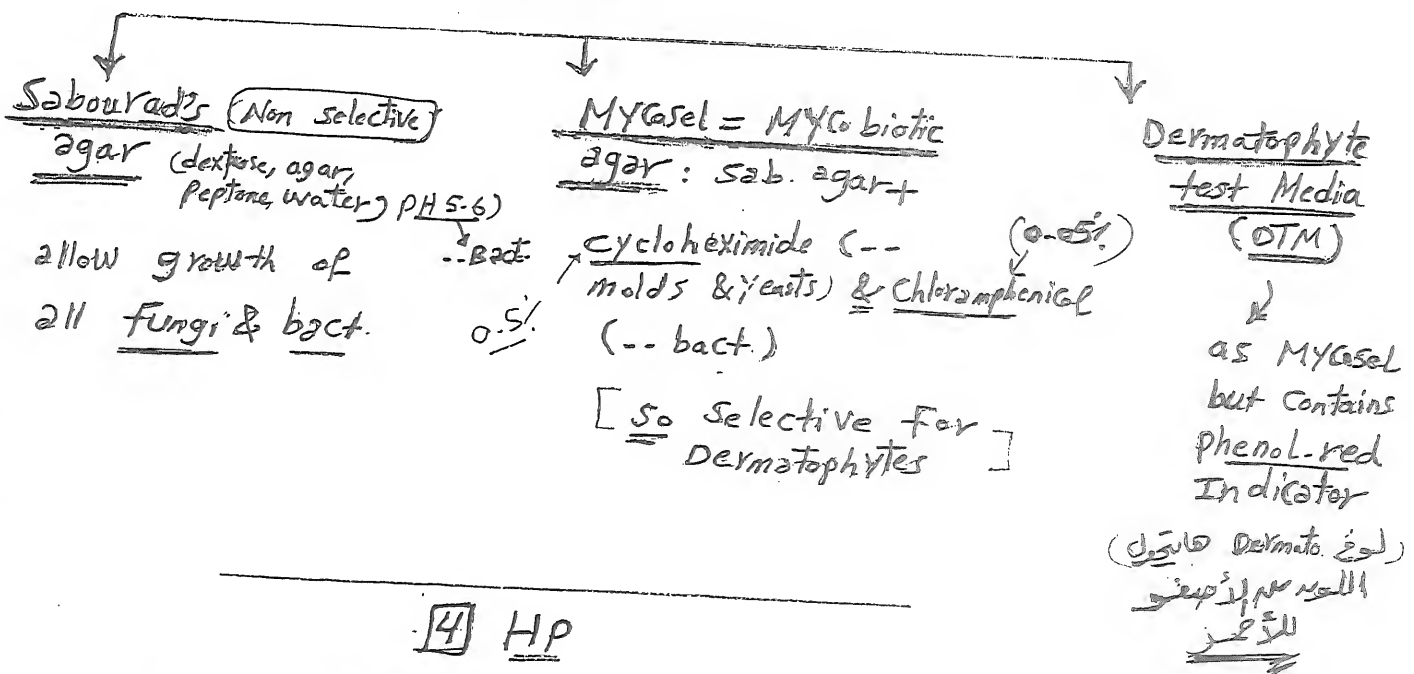
2. Trichophyton
- Cylindrical
 - Thin-walled
 - Smooth wall
 - 4-6 septa



3. Epidermophyton
- Pear-shaped
 - Fairly thick wall
 - Smooth wall
 - 3-4 septa

"Conidia"

[3] Culture:



[4] HP

Stain → PAS or Silver

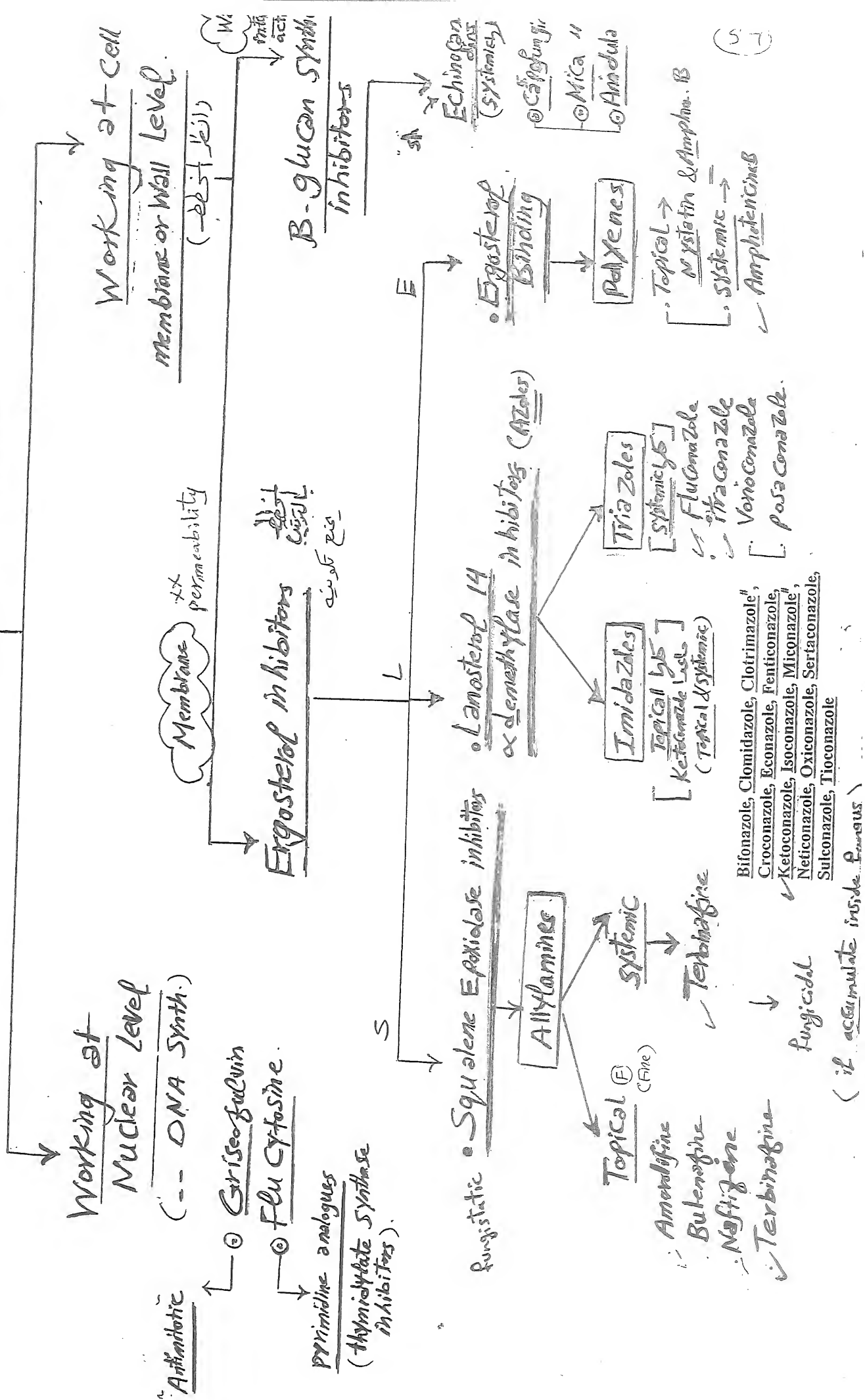
Yeasts: intracellular, have large capsule, bud, Hyphae, Granules (Madura) at st. corneum

[5] others

- A. Serology → CFT & E/ISA (in deep MYCsel)
 B. Skin Tests → useful in nonendemic area (Dermatophytin) Test

Antifungals

(Acc. to the Mechanism)



Systemic Antifungals

(58)

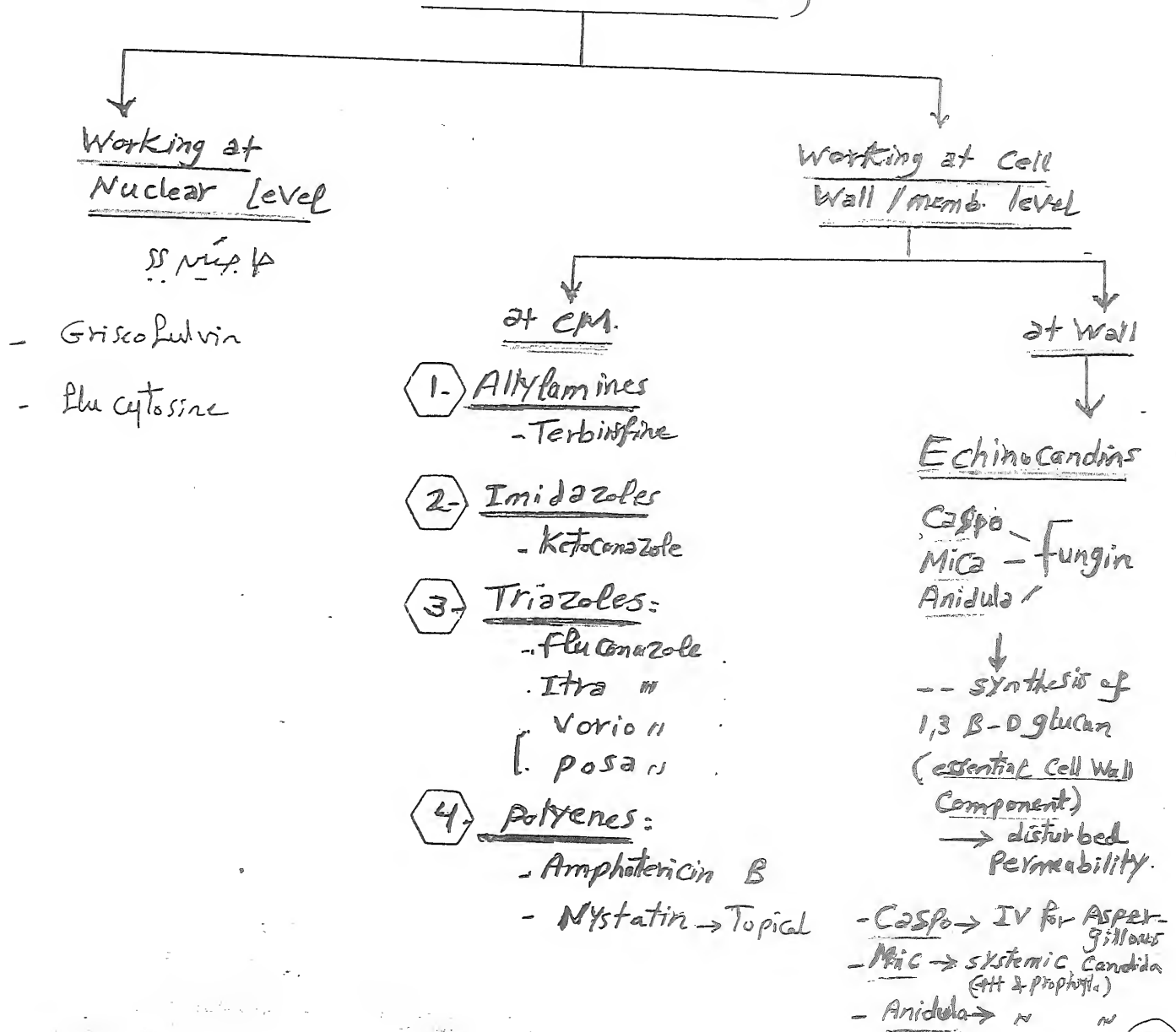
①

③

1. Types.
2. Mechanism of Action
3. S.E
4. C.I
5. Interactions
6. Absorption
7. delivery To the skin (Excretion)
8. Spectrum of Activity (Efficacy).
9. Doses.

Types (Classification) Acc. to the Mechanism

अनुसार



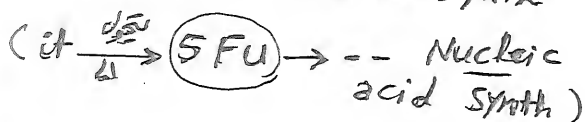
② Mechanism of Action:-

(59)

(4)

- Flu Cytosine

- fungal Nucleic acid synth



- Griseofulvin:-

- ① -- Fungal Nucleic acid synth
- ② dysfunction of Spindle microtubules

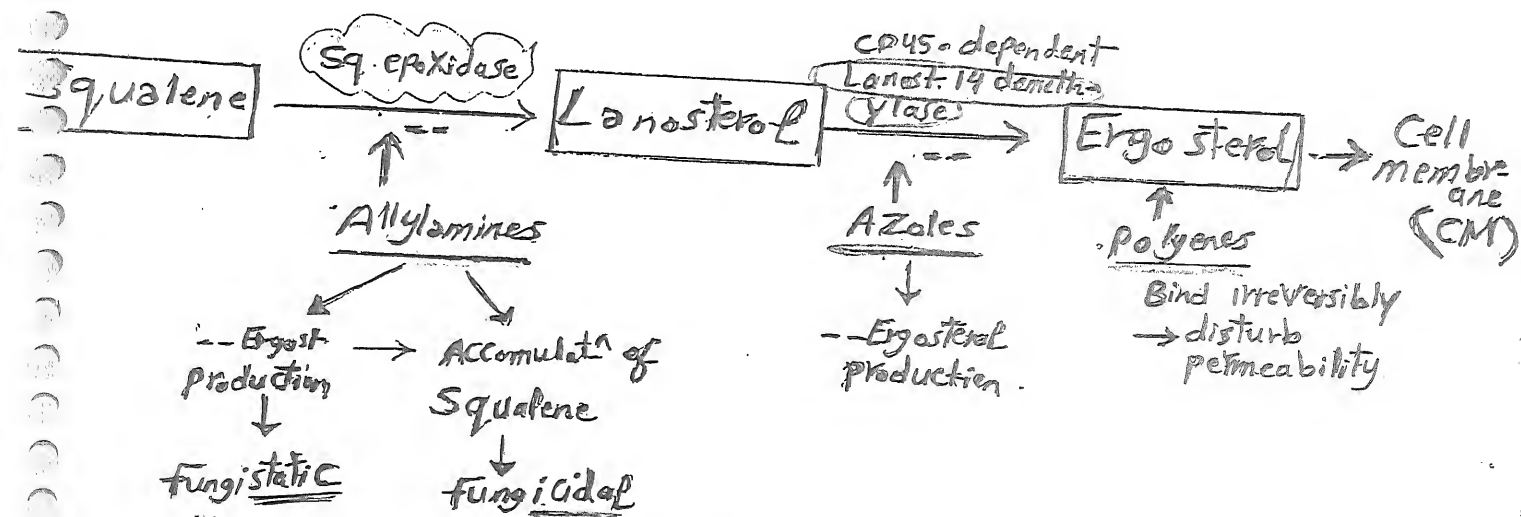
Polyenes.

binds "Irreversibly" to Ergosterol \rightarrow altering the memb. permeability. xx

Allylamines & Azoles

Mechanism of systemic

(imp. p. 49)



the 2 \leftarrow Azoles \leftarrow Terbinafine (-- Ergosterol production) BY -- of 2 enzs \leftarrow Azole: Lanost dem 14/16
Terb: Sq. epoxidase

MB CYP 450 present in

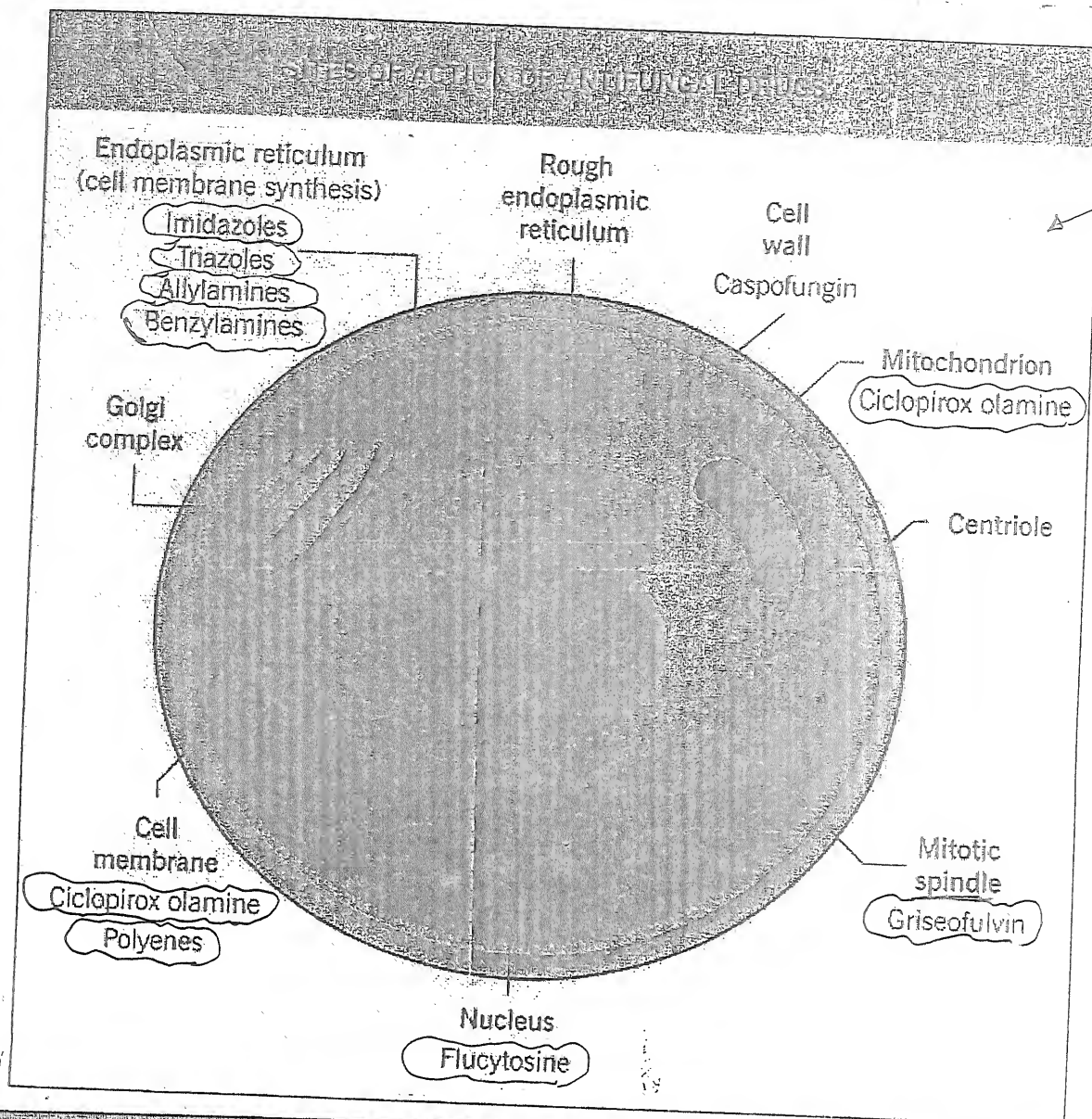
- Testis
- Adrenal
- Ovary
- Liver

- CYP2D6: iso form of CYP450.

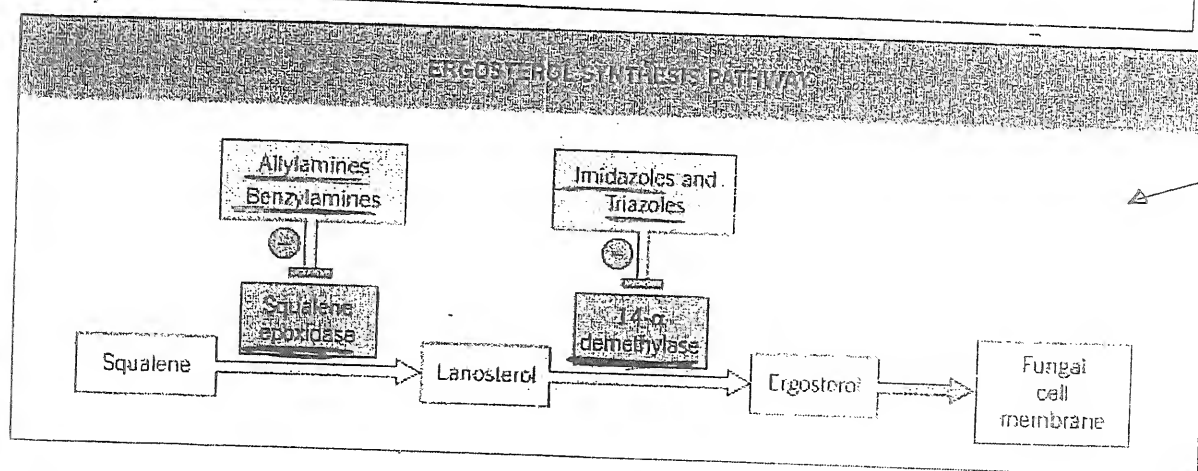
- All fungistatic EXCEPT:

- Terbinafine (static & cidal)
- Tolnaftate (cidal)
- Nystatin (cidal in higher conc)

(49)



sites of action on fungi



ergosterol pathway synthesis

③ S.E.:

- **Flucytosine** \leftarrow BM toxicity
Hepatotoxicity

* GIT:
disturbance.

Colitis.

* Neurological

Headache ✓
fatigue ✓
Vertigo ✓
Confusion ✓

* Electrolyte ↓

Hypok⁺
Hypoglycemia

- **Grisofulvin** (Very safe)

③ \leftarrow GIT
Headache
Flushing

⑤ p : . purpura
porphyria
photosensitivity
Ppt. of L.E
L.P \leftarrow بالرقع
كحلج فيه

• Hepat.
• Neurol.
• Epist.
• Fever
• Arthralgia
• Leukopenia

others: . leukopenia, Hepatotoxicity, Sore throat
Neurological & Epistaxis, Fever, arthralgia.

• **Polyenes**

(Amphotericin)

Slow IV

5% dextrose

BM Toxicity.
Hepato tox
Nephrotoxicity.

GIT.

Common:

Fever
chills
Nausea
Vomiting

• others:
Cardiac
Seizures
LCF

- **Ketoconazole**

• GIT
pruritus & rash

① Anti androgenic:

- det: -- of
steroidogenesis (-- suprarenal
glands)

- \rightarrow impotence
 \downarrow Libido
Gynaecomastia
Menest. irreg.

① Hepato toxicity:

Idiosyncrasy or

dose dependant

incid = 1 : 10,000

Itraconazole

(minimal)

GIT
Rash

\leftarrow HF
قلبي

Fluconazole

(minimal)

GIT
Rash (EM)
Headache

All of them:

GIT
Rash (Morb.)

Ketocon. \leftarrow Hepatotoxic
Anti-androge

Fluc \rightarrow EM

Terb \rightarrow SCL & Leukopenia
PS

KIF & Terb.

Terbinafine

GIT

Rash

Leukopenia

EM, TEN
AGEP
SCL
PS

\rightarrow (إقف)

الرضاعة

(All systemic)

كذلك منع

oxican ← Topical.

excreted in milk)

All systemic Antifungals should be used with caution in patients with Liver & dose adjust ← Kidney dis.

Azoles مع HF

تفني → All are Category C in pregnancy

لكن EXCEPT: Amphoterecin B & Terbinagine are

لا ممنوع الحمل

Griseofulv. < Porphyria ✓
LCF.

Ketoconazole < Liver dis.
Achlorhydria ✓

Itraconazole: (as) Ketoconazole + HF ✓

↓ HCL → ↓ abs

مع HIV

Porphyria
Achlorhydria
HF

5 Absorption of Systemic Antifungals

(fatty)

(Acidic)
(low pH)

(ALK)

(Any)

جزيء وقوليتيم ← إيطيه مع لبن أو آيس كريم
كيتوكونازول و إيتراكونازول ← غير ليمونه أو كولا
لامازيل ← نانتالغ
فلوكونازول ← أي فود

* Food: ↑ Absorption of Griseofulvin

* Antacids: (↓) absorption of Ketocona & acenazole

* Antacid: ↑ Absor of Lamisil

NB

Griseofulvin

Absorption is enhanced by

- Fatty meal
- Micronized Formulas

(دقائق بندق)

micronized
(Fulvin)®

ultra microni-
zed

(optigrisaf)

[لأقوى]

(63)

Interactions

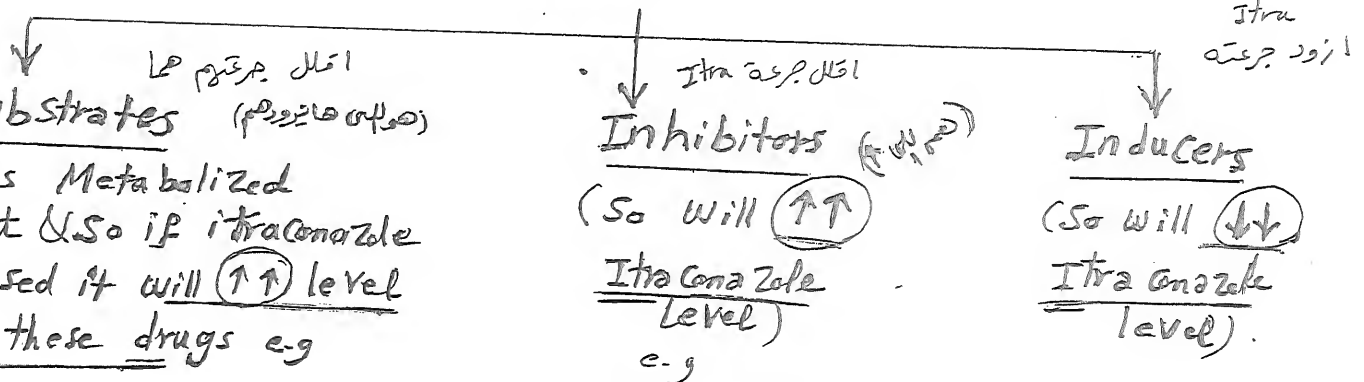
(mainly e Azoles)

Systemic Azoles

this Antifungal related to (CYP 450 3A4) as-
Following:-

- 1- inhibit CYP450 3A4.
- 2- Metabolized by N N.

CYP 450 3A4 has



① مجموعة مثبطات

- Cyclosporine
 - Tacrolimus
 - Viagra
 - HIV protease inhibitors
- Cs
Erythromycin
OCPS.

② مجموعة قلوب

- Quinidine
- Warfarin
- Digoxin
- CCB

← عنوع
ياطر
azoles

③ مجموعة مهدئة

- Cisapride
 - Astemizole
 - Terfenadine
 - Midazolam
 - Triazolam
- + Itra. → Arrhythmia

④ Lovastatin + Itra → Rhabdomyolysis.

- Rifampicin
- INH
- Phenytoin
- Griseofulvin
- Cs

→ أهم ④

⑤ بلاش مؤثر
مع aldosterone

التي موجودة في
Zolam
lovastatin.

NB Fluconazole also -- CYP 450 (2C9)

So affect Metabolism of:

(65)

- Trifluorol ✓
- Amiodarone
- ✓ Terbinafine.

3. Terbinafine Interaction:-

Metabolized
By
CYP450 2C9
-- CYP450
2D6

• (↑) Level of $\left[\begin{array}{l} \text{BB.} \\ \text{TCA} \\ \text{SSRIs} \end{array} \right]$ all metabolized by CYP2D6

• (↓↓) Level of Cyclosporine (by ↑ clearance)

(3C) $\left\{ \begin{array}{l} \text{Codein} \\ \text{Caffeine} \end{array} \right.$

• Its Level (↓↓) By: Rifampicin

• its Level (↑) By: Antacids

4. Griseofulvin [CYP 450 (3A4) inducer]:

• (↑↑) Alcohol effect. ✓

• (↓↓) Level of Warfarin.
Barbiturates.

(OCPS) Cyclosporine.

↓ ↓ ↓ → menstrual irreg. Conception.

NB: • All Antifungals ↓ Level of Cyclosporine
Except Azoles

• Gastric acidity essential for: $\left\{ \begin{array}{l} \text{Azoles} \\ \text{Griseofulvin} \end{array} \right.$ (But) ↓↓ Terbinafine

So Antacids $\left\{ \begin{array}{l} \downarrow \text{abs. of} \\ \uparrow \text{Abs. of} \end{array} \right.$ Terbinafine.

7. delivery (Exc) to the skin:

3 Ways / Direct diffusion to KCs (تقريباً كلهم)
 Sebum.
 Sweat.
 ↓

All of them are EXcreted in Both (Sebum & Sweat (except))

Excretion of antifungals		
Drug	In sebum	In sweat
Griseofulvin	+	+++
Ketoconazole	+	+
Itraconazole	(+++ both)	+
Fluconazole	?+	++
Terbinafine	(+++ major)	-

1- Terbinafine: Never in Sweat (تحتوي على ماء عذيق)
 xx

2- Griseofulvin & Fluc: mainly → Sweat

3- Itra & Terbinafine: " → Sebum

4- Ketoconazole: → Both equally.

8. Spectrum (Efficacy) of Activity

Efficacy of systemic antifungal drugs

	Dermatophytes	Candida	Pityrosporum
Griseofulvin	+	—	—
Ketoconazole	+	+	+
Itraconazole	+	+	+
Fluconazole	+	+	+
Terbinafine	++	±	—

Doses Table (1) Systemic Antifungals for Dermatophyte Infections

Disease	Griseofulvin Tab=125mg Susp=125mg/5ml	Terbinafine Tab=125(250mg)	Fluconazole Cap=150mg	Itraconazole Cap=100mg
T.capitis & T.barbae	125mg/10kg/d/6w عاشق ١٠ كل ٦ أسبوع	10-20kg: 62.5mg/d/4w 20-40kg: 125mg/d/4w >40kg: 250mg/d/4w (7 mg / kg / d)	6mg / kg / d For 6 w or 8mg / w for 16 w	5mg / kg Per d for 4w w for 4ms كبولة كل ٤ أسبوع
Favus	125mg/10kg/d/10w	(7 mg / kg / d)	8mg / w for 16 w	كبولة كل ٤ أسبوع
T.corporis & T.cruis	125mg/10kg/d/4w	250mg/d/1-2w أسبوعين	150mg/w/4w	200mg/d/w (١٤)
T.manum & T.pedis	125mg/10kg/d(2-3m)	250mg/d(2-6w)	150mg/w/6w	200mg/d(2w) ٢٨
Onychomycosis	125mg/10kg/d 6m in finger nail 12m in toe nail	250mg/d 6w in finger nail 12w in toe nail	150mg/w 6m in finger nail 12m in toe nail	400mg/d/w pulse every month 2m in finger nail 3m in toe nail

(9) Dosage: All of the 5 drugs in: (67)

→ Dermatophytes (Tinea capitis, T. facie, T. ... etc)

→ TVC

→ Candida.



~ see before ~

NB :: Griseofulvin:

• metabolic product of mould « Penicillium griseofulvum »

Q ~ see ~ Causes of th failure:

1- Failed Abs

2- ↓ peripheral Circ.

3- Coexisting Pathology

4- 2ry infection

5- Idiopathic resistance

6- Poor Compliance

7- Carrier state. (T. Capitis)

as
Kerion

• Ketoconazole: other uses: (Antiandrogenic)

1- SD

2- pit. folliculitis

3- Leishmaniasis ✓

4- Reiter ✓

5- Cushing

6- Prostatic Cancer.

Griseofulvin doses:-

↓
Microsized

• Adult: 0.5-1gmd (1g/2g)

• Child: 10-20 mg/kg (max 750).

(e T. Capitis →
↑ to 20-25 mg/kg/d)

↓
Ultra microsized

(↓ dose 30% of Microsized)

• Adult: 330-375 (350)

• Child: 5-10 mg/kg
(max 750)

Topical antifungal

- 1- classification acc. TO mechanism
- 2- other antifungals

Allylamines
AZoles
Polyenes
+ Others
AntiFungal
Antibiotic
AntiInflamm.

Others	
Ciclopirox olamine (Batrafen)	A- fungicidal and fungistatic: 1- -- uptake of precursors required for cell membrane synthesis, 2- alters cellular permeability, and 3- inhibits fungal respiratory activity, i.e. it interferes with iron-dependent systems including cytochromes, catalases and peroxidases B- Antibacterial (G+ve and G-ve).
Tolnaftate (Tinactin)	As Allylamines
Undecylenic acid	?? Unknown.
Clioquinol (iodochlorhydroxyquin)	antifungal and antibacterial. Its mechanism of action is unknown.
Selenium sulfide (Selsun - Blue)	Antimitotic and reduces cellular adhesion in the stratum corneum, allowing for shedding of fungi

Other topical agents with antifungal activity not listed in this table include : White field oint * zinc pyrithione, *sodium thiosulfate, * salicylic acid and sulfur, * haloprogin, *mafenide, *amorolfine, *propylene glycol and *benzoyl peroxide.

NB: . Anti-inflammatory activity of Antifungals (Topicals):

- 1- Allylamines & Benzylamines: → -- Neut. Chemolaxis
- 2- AZoles : -- chemotaxis, Calmodulin, -- PGs & leukotrienes & -- Histamine release.
 ⊙ Ketoconazole = antiinflamm. = Hydrocortisone
- 3- Ciclopirox: -- PGs & leukotrienes
 (أقوى مجموعة مضادات الالتهاب)
 ← (A) Allylamines & Benzylamin (+++ Dermatophyte / ± Candida)
 (B) Ciclopirox (++ " / ++ ")
 (C) AZoles (+ " / + Candida)

NB : Miconazole, also:-

- 1- affect TGs & fatty acid Synth.
- 2- -- Fungal oxidative & peroxidase enz.

(3) Activity of Topical Antifungals

(9)

① Mainly Anti Dermatophytes:

- White field (3% SA + 6% Benzoic acid)
- Castellani's paint (5% LiCl)
 - Magenta red (Basic Fuchsin)
 - phenol
 - Resorcinol
 - Boric acid
 - Acetone

② Mainly anticandidal:-

- K. permanganate 1/500
- Gentian Violet 1% (Antifungal & Antibact)
- Nystatin.

③ Mainly antiyeast (Malassezia):-

- Selenium Sulfide 2.5%
- Zinc pyrithione 2%
- Na thiosulphate.

④ Broad Spectrum:

- ciclopirox (Anti $\left\{ \begin{array}{l} \text{Fungal} \\ \text{bact.} \\ \text{inflamm.} \end{array} \right.$)
- Imidazoles (Anti $\left\{ \begin{array}{l} \text{Fungal} \\ \text{bact.} \\ \text{inflamm.} \end{array} \right.$)
- Allylamines (++) Yeast, (+) Candida
- propylene Glycolic (Keratolytic) **
- Idocheorhydroxy quin (Vi-form)
 - Antibact ± Antifungal.
 - Neurotoxic → so avoid use in diaper for long period.
- Amorolfine / & Haloprogin.

١- الكريجات أو التراهم : إدخاله مرسماً يومياً إلى أن
 يحدث تحسن ظاهري (غالباً ٢-٤ أسابيع)
Dose:

70

٢- انظر اسحق:
 إساميوهاث في TVC

Topical th of onychomycosis

oral nystatin

توضع في الفم وتترك قدر استطاع
 ثم تبتلع (مرة واحدة)

الجرعة ١- ١٠٠٠٠ وحدة / يوم : أول ٤ مرات يومياً

٢- ١٠٠٠ وحدة : ٤ مرات يومياً

Indications ??

S.E ١- intat (CO)

٢- Clioquinol: (Vioform)

⊗ Neurotoxic

⊗ discolatⁿ of
 ← clothes
 skin
 Hair
 Nails

Contra indications → Hypersensitivity

Interactⁿ → -ve

في اليوم
 أو أقل
 =
 مرة واحدة

Id Reaction (Autoeczematization; Secondary generalized eczema)

Def: An acute allergic dermatitis develops at cutaneous sites distant from an inflammatory or infectious focus that is not caused directly by the inciting cause of the primary inflammation or infection.

Pathophysiology: قراءة سريعة

- disseminatⁿ of Ag.
- " cytokines.
- ↓ initiates ↓
- Cross Antigenicity.
- Threshold.

While the exact cause of the id reaction is unknown, the following factors are thought to be responsible:

- ① abnormal immune recognition of autologous skin antigens,
- ② increased stimulation of normal T cells by altered skin constituents.

= (Cross Antigenicity)

- ③ lowering of the irritation threshold, ↓

- ④ dissemination of infectious antigen with a secondary response, and

- ⑤ hematogenous dissemination of cytokines from a primary site.

Causes

3I

Infect.
Inflamm.
Iatrogenic.

A-infectious

bact →

- *TB.....tuberculide
- *leprosy....leproside
- *bacterial...bacteride

fungal →

- *dermatophyte...dermatophytide (with kerion and inflammatory)
- *T.pedis
- *candida....candidide (monilid)

ectic →

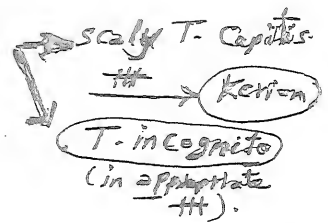
- *pediculosis...pediculide
- *Scabide.

B-inflammatory

*Stasis dermatitis (commonest; specially during exacerbation)

- (72) (6)
- * contact dermatitis (specially if ass. with stasis dermatitis)
 - * burns.

C- Iatrogenic: Id reactions may be triggered by antifungal treatment.



Clinically: Clinical forms include the following:

- with kerion: maculopapular or papulovesicular rash on trunk (± initiated by Trauma to scalp or X Ray).
- with inflammatory tinea pedis: (Vesiculo bullous T. pedis)
- * Pompholyx like eruption (common).
- * Other less common (EM like, EN like and bilateral Erysipelas like eruption on the anterior legs)

-with candida: pompholyx like eruption of hands, EAC, chronic urticaria.

-with stasis dermatitis (common): An acute, intensely pruritic, symmetric maculopapular or papulovesicular reaction that involves the forearms, thighs, legs, trunk, face, hands, neck, and feet (in descending order of frequency)

The rash has five criteria:

1. Sudden onset that occur 1-2 weeks after primary infection or dermatitis and usually preceded by exacerbation of the preexisting dermatitis induced by infection, scratching, or inappropriate therapy. (Id reaction to tinea incognito has been reported) or: Highly inflammatory fungal inf.
2. Cannot be identified as a common dermatosis.
3. Not due to direct external contactant or infective agent. (no fungus in lesion)
4. antigen present at a remote sight.
5. Resolution with subsiding of primary reaction (infection/dermatitis). (± of dermatitis or fungal focus)

3 PPT:-
v. scratch.
v. inf.
v. ++

(So +ve skin Reaction to fungus → +ve)

Inv 1. (HP) → ECZ.
2. Patch test (exclude CO)

1. Try focus ++
2. Antihistamines & CS

Q DD of Dermatophytosis

(73)

1. DD of T. Capitis \rightarrow [C 501]
2. DD of T. faciei \rightarrow \rightarrow
3. DD of T. barbae
4. DD of T. Corporis \rightarrow "annular lesion DD" \rightarrow \rightarrow
5. DD of T. Cruris \rightarrow "DD of intertrigo" \rightarrow \rightarrow
6. DD of Toe web inf. \rightarrow \rightarrow
7. DD of T. manum & Ungium

NB

Commonest organisms

① T. Capitis : T. tonsurans \rightarrow M. canis

② T. faciei :

③ T. barbae : T. mentagrophytes & verrucosum (Zoo philic)

④ T. Corporis : T. rubrum & Mentagrophytes

⑤ T. Cruris : " & " & E. floccosum

⑥ T. Ungium : " & "

⑦ T. manum : as T. Cruris

⑧ T. pedis : \rightarrow Interdigital } Mentagroph. &
 \rightarrow ulcerative } rubrum.

\rightarrow Moccasin : Rubrum & E. floccosum
 \rightarrow inflam. : Mentagrophytes.

Subcutaneous Mycoses

(74)

- Sporotrichosis
- Mycetoma
- Chromoblastomycosis
- lobomycosis
- basidiobolomycosis

Sporotrichosis (Rose Gardener's dis.)

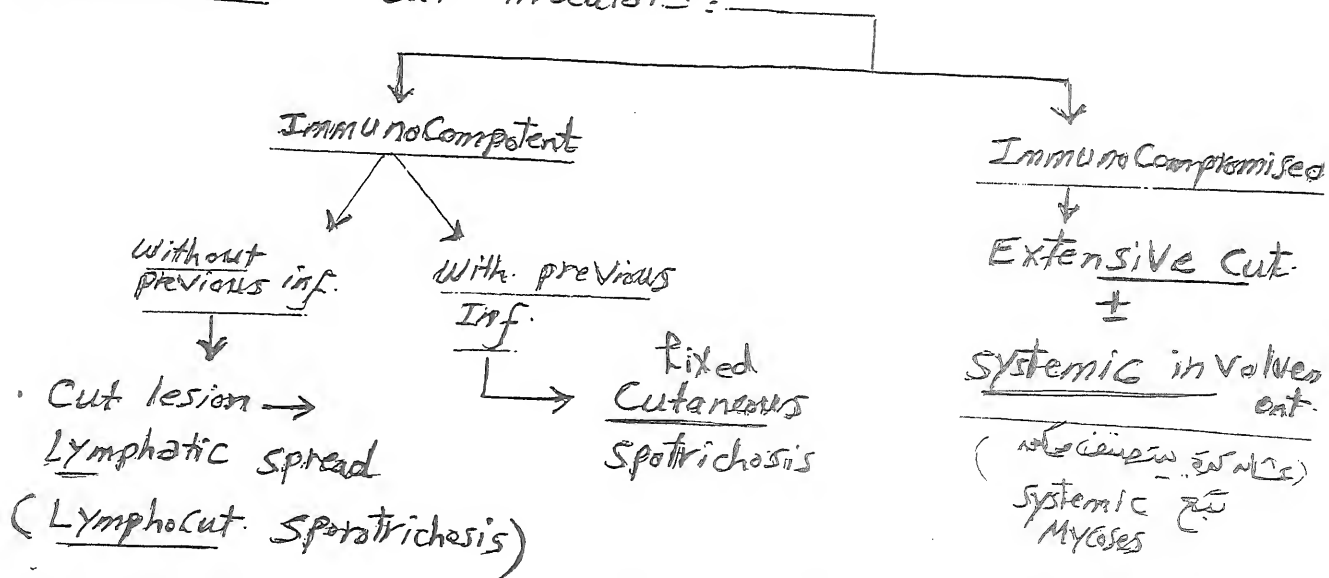
• S.C mycosis caused by:

organism: *Sporothrix schenckii* (dimorphic fungus)

Source: Soil (orchids, roses)
 (منه ما يقرب إلى بيت حجازي)
 "بالتفكير والورد"

• Mode of Transmission: inoculated by thorns & wood

• Etiopathogenesis: Cut. inoculation:



• Endemic Fixed Variety: remains localized to point of inoculation → Nodules, ulcers, Acneiform lesions, verrucons. (at high Immunity)

usually By Inhalation

CLP - ^{Cut} Lymphocut disseminated

(75)

1. Classical (Lymphocut): inoculation $\xrightarrow{\text{several hrs}}$ Asymptomatic
 single papule at site of injury (Commonest is hand)
 \rightarrow ulcer \bar{e} purulent discharge \rightarrow dermal & S.C
 Nodules & ulcers along lymphatic drainage ✓
 (علاج كبريت) [Sporotrichoid Pattern] \rightarrow
 \rightarrow fibrosed Lymphatics. \rightarrow DD Q

2. Disseminated Lesions: \rightarrow (S.C) Nodules

INVs

- ① Path: dermal & S.C suppurative granulomatous
 Supp. Granuloma Inflamm. \bar{e} Budding - Cigar shaped
 Budding... organisms can be seen (PAS, silver or fluoresc. labelled Ig)

- ② Culture: (For pus or Tissue): on: (Ept 37°C)



- IE glabrous white Brown mold that become firm & linked \rightarrow dark
- ME delicate "canidia" clustered at end of Canidiophores \bar{e} single thick pigmented Canidia \oplus seen.

NIE: White, Pasty like colonies.

MIE: Cigar-shaped budding "yeasts"

Typical

DD: (of diseases \bar{e} Sporotrichoid of Lympho Cut. Pattern)

Most Common

Unusual

Rare

- ① Sporotrichosis
- ② Atypical Mycobact. (SP M Marinum)

- NoCardiosis
- Pyogenic inf. (staph & strept)
- Pseudoallescheria

- TB
- Leishmania
- Cut Scratch dis

- Cowpox
- Anthrax
- Glanders
- Tularemia

Treatment

- ① Cut & LymphoCut → SSKI & Itraconazole
- ② Disseminated: → Amphotericin

SATURATED SOLUTION OF [REDACTED] (SSKI)

Mechanism of Action → Immune modulator → Neut. & ++Heparin from mast cell → --CM
Antifungal → concentrate in granulomatous
Necrotic tissue → alter host
immunologic & Non Immunologic Resp.

- 1- In inflammatory diseases: it is thought to exert its effects via immune modulation. Similar to dapsone, [REDACTED] appears to be effective in suppressing neutrophil migration and toxicity.
- 2- In sporotrichosis: unknown, Although neither fungistatic nor fungicidal, [REDACTED] is thought to affect the host's immune reaction to the organism.

Kinetics: it is rapidly absorbed, widely distributed into the thyroid and salivary glands, choroid plexus and placenta, and then excreted primarily through the kidneys.

USE OF [REDACTED] (KI)

Saturated solution of [REDACTED] (KI) 1 mL = 1000 mg ← Saturated sol

- 1000 mg/ml
- Droppers are supplied with calibrations for:
0.3 ml (300 mg) [REDACTED]
0.6 ml (600 mg) [REDACTED]

Crystallization may occur with cold temperatures, but rewarming and shaking dissolves the crystals: discard if solution turns yellow-brown. should be diluted in water or juice to try to minimize the bitter aftertaste

Dose: * EN: In adults and older children, common dose = 300 mg tid po with starting dose 150-300 tid

* sporotrichosis: سابقا Start 300mg x 3/d → ↑↑ grad. to 600mg/d for 6m.

Side effects of [REDACTED]

- Acute-nausea, bitter eructation, excessive salivation, urticaria, angioedema, cutaneous small vessel vasculitis
- Chronic-enlargement of salivary and lacrimal glands, acneiform eruption, iododerma, hypothyroidism, hyperkalemia, occasionally hyperthyroidism

Indications: Although [REDACTED] is not FDA-approved for any cutaneous disease, it is a highly effective treatment for cutaneous and lymphocutaneous sporotrichosis (not for systemic). [REDACTED] has also been used successfully for a variety of neutrophilic disorders (Sweet's syndrome, pyoderma gangrenosum), granulomatous disorders (Wegener's granulomatosis, granuloma annulare), and several types of panniculitis (erythema nodosum, nodular vasculitis, subacute nodular migratory panniculitis).

Indications: -

- 1- Neut. dermat.
- 2- granulomatous
- 3- panniculitis
- 4- sporotrichosis

Contraindications: The only absolute contraindication is a hypersensitivity reaction to iodides. Relative contraindications include thyroid or cardiac disease, renal insufficiency and Addison's disease [34]

Use in Pregnancy and Lactation: category D in pregnancy and compatible with breastfeeding [5]

Drug Interactions: Concurrent use with other medications such as ACE inhibitors, -sparing diuretics and -containing medications may result in significant hyperkalemia. Hypothyroidism may result when used in combination with amiodarone, lithium, phenazone and, possibly, sulfones

ACEI
Aldactone

Hypoth

Wood's light (خضري)

77

Def. Device composed of 2 Parts:

- ① Wood's Lamp: High pressure Mercury Arc that emits UVL
- ② Wood's Glass: Barium Silicate containing (9%) Nickel oxide. It's opaque to all light Except 320-400 nm (Mainly 365nm) UVA

• WL uses in diagnosis of skin diseases

disease	W.L findings.
<p><u>T. Capitis</u></p> <p><u>Fungi</u> responsible for <u>Fluorescent Tinea capitis</u> See Cats And Dogs light</p> <p><u>T. schoenleinii</u>, <u>M. canis</u> <u>. audouinii</u>, <u>M. distortum</u> <u>T. ferrugineum</u></p> <p>All produce a small spore ectothrix, hair invasion except <u>T. schoenleinii</u></p>	<p><u>Diagnosis</u>: green fluorescence (E some strains)</p> <p><u>Screening for HT</u>: by noting <u>Non fluorescence Band of hair</u> (NL Hair)</p> <p><u>Green color</u> is due to <u>Pteridine</u> compound produced by <u>Tineas</u>.</p>
<p><u>TVC</u></p>	<p><u>Hyperpig.</u> Type: yellow fluorescence</p> <p><u>Hypopig.</u>: obvious visualization of inf.</p>
<p><u>Erythrasma</u></p>	<p><u>Coral-red fluorescence</u></p> <p><u>Other causes of Red fluorescence</u>:</p> <ul style="list-style-type: none"> • <u>AV</u> (P. Acnes → Porphyrins) • <u>Some Necrotic Pm.</u> (<u>SCC</u>) • <u>Openings of NL SKIN</u> of <u>Face</u> <u>Trunk</u> <u>PET</u> • <u>Red color</u> is due to <u>"Porphyrins"</u>

SKIN disease	W.L findings
<ul style="list-style-type: none"> <u>Pseudomonas aeruginosa</u> 	<ul style="list-style-type: none"> Yellow-green Fluorescence (d.t. <u>Pyocyanins</u>) Used to detect Pseudom. skin inf. in Burn patients.
<ul style="list-style-type: none"> <u>pigmentary disorders</u> 	<p>(A) <u>Hyper-pigm.</u> e.g. Melasma</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>↓</p> <p><u>Epid. Hyperpigm</u></p> <p>↓ W.L</p> <p>Accentuation of pigm</p> <p>زيادة صبغة الجلد (زيادة)</p> </div> <div style="text-align: center;"> <p>↓</p> <p><u>Dermal Hyperpigm</u></p> <p>↓ W.L</p> <p>unchanged</p> <p>لا يتغير</p> </div> </div> <p>other < <u>Epid. Pigm.</u> : freckles <u>Derm</u> : Mongolian spot & post inflam.</p> <p>(B) <u>Hyperpigmented disorders</u></p> <p>Diff. bet. Vitiligo (depigm) & Hyperpigm SKIN lesion. (Nevi) leprosy, Tub. sclerosis)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>↓</p> <p><u>Vitiligo</u> (Amelanctic)</p> <p>↓</p> <p>Accentuation of depigm. (d.t. ↑ Contrast)</p> <p>↑ pigm. of NL skin ↑ Hyperpigm of lesion</p> </div> <div style="text-align: center;"> <p>↓</p> <p><u>Nevi</u></p> <p>↓</p> <p>Constant color.</p> <p>Diff. TS Hyperpigm</p> </div> </div>
<ul style="list-style-type: none"> PCT AV 	<ul style="list-style-type: none"> Coral red fluorescence of Urine, Faeces, Blister fluid
<ul style="list-style-type: none"> Tetracyclines Intake 	<ul style="list-style-type: none"> Tetracyclines if: <ul style="list-style-type: none"> Nail, Teeth, Sebum. Ingested by children; Teeth $\xrightarrow{W.L}$ Yellow deposit in Lunula of nail \rightarrow pink Nails \rightarrow d.t. Mepacrine.

others Diagnostic uses

(79)

- *Pyrosporium folliculitidis* → yellow green fluorescence
- *Pseudomonas* → fluorescence
- Scabies → see Scabies
- Chromidrosis → detect "lipofuscin in clothes"

((NB))

causes of false +ve W.L. Substances that may give fluorescence by W.L:

- Ointments
- Exudates
- Tetracyclines in sweats
- Make up, deodorants & Soap.

علائم که یخچال
تنظیمی اکبر
الافیتا، ماسک
Gyrtrosmaytk

causes of false -ve W.L.

لم القاه لى مظالم يرد

• White Coats of Examiners.

• Showering may remove scales of T.V.C → false -ve

• No fluorescent organisms (e.g. T. Capiti)

W.L لى

① مجموع لى ال بيك

المضغ (1-2)

② جيل اى عامر تويك

③ Camphit dark

④ general dark adhesion

⑤ لى عامر ص بيا

المضغ (15-10)

⑥ جيل ص بيا طاريف

⑦ قرحه لقرق كاسير

W.L effect of organism

المضغ

ما يطفئ [Acne
المضغ T.V.C

(في القصر يلوه مضغ كوي)

Diagnosis

Differential bet.

2 Types

Detect of Bony
effect

(1) Grains

2 types

Color

Mic Exam

Crushing bet 2 glass slides
+ Gram stain

2 types	(Bact)	Red (to pink)	Actino
	(B/F)	White (to yellow)	
	(Fungal)	Black (to brown)	Eumyc.

Actinomycetoma	Eumycetoma
Gram-positive (purple)	Gram negative (pink-red)
0.5- to 1-µm-wide filaments	2- to 5-µm-wide hyphae
Aseptate fine branching filaments (Ascp. Thin filaments)	Septate hyphae (Thick hyphae)
Stained better with Gram stain	KOH + Stained better with Gomori methamine silver or PAS stains

(1) X-Ray: Periapical Enst. osteomyelitis. & Osteor. osteomyelitis.

(2) US: diff bet. Myel. osteomyelitis. (thick-walled cavity)

fine Echos at bottom of Cavities. No Acc. Enhance.

early Bony effect

(3) CT - MRI (up to 1st dot in Circle Sign)

(2) Histopathology

Actinomycetoma

"Splendore-Hoeppli phenomenon"

"Star shaped, Homogeneous Eosinophilic material around the grain" (Asteroid Body)



Eumycetoma

Suppurative (Necr.)

palisading granuloma

Surrounding the Grains.

(3) Culture & Serology

NB Dye Film on Pus: Cigar shaped Tissue: Asteroid Bodies.

Mycetoma (Madura foot)

	ACTINOMYCETOMA (Actinomycosis, Bacterial)	EUMYCETOMA (Maduramycosis, Fungal)
Causative organism	<ul style="list-style-type: none"> - Bacterial (Gram +VE, aerobic, filamentous) - Usually: Actinomycetes belonging to the genera <u>Nocardia</u>, <u>Streptomyces</u> (<i>somaliensis</i>) and <u>Actinomadura</u> (<i>madurae</i> and <i>pelletieri</i>) 	<ul style="list-style-type: none"> - Fungus - Usually: <i>Madurella mycetomatis</i> and <i>Pseudallescheria boydii</i>
IP	3Ms-9Ys	
C/P	<p style="text-align: center;">- Triad of: <u>Painless</u> soft tissue swelling, draining sinus tract, extrusion of grains</p> <p style="text-align: center;">- Foot (70%), then Hands, then other sites</p> <p>- No pain except if 2ry bacterial infection or bone affection</p> <p>- Actinomycetoma tends to progress more rapidly, with greater inflammation and tissue destruction and earlier invasion of bone than <i>Eumycetoma</i>.</p> <p>- Bony lesion may be Lytic (punched out lesions) in Eumycetoma or osteolytic and osteosclerotic in Actinomycetoma.</p> <p>- Associated: scars, dyspigmentation, Lymphoedema (either due to spread or 2ry bact. Infection), spread of infection to all deeper structures</p>	
Complications	<p>The disease causes disfigurement but is rarely fatal. When left untreated, disease continues to progress, and bacterial superinfection leads to increased morbidity from local abscess formation, cellulitis, bacterial osteomyelitis. In advanced cases, deformities or ankylosis may occur.</p>	
Differential Diagnosis	<p>Mycetoma has to be differentiated from various deep tissue infections like chromoblastomycosis, infections by atypical mycobacteria, Osteomyelitis (bacterial or tubercular), actinomycosis, botryomycosis, and fixed variety of Sporotrichosis. Subtle differences in clinical presentation as well as results of the diagnostic investigations as outlined below are useful in achieving the diagnosis.</p>	
Treatment	<p style="text-align: center;">MEDICAL ONLY</p> <p><u>Antibiotics</u> : Cyclical dosing (1-2 cycles) COMBINATION of 2 drugs for 5Ws</p> <p>A- 2 main: either streptomycin (14 mg/kg/d intramuscularly) or Amikacin (15 mg/kg/d, divided into two daily doses PLUS EITHER</p> <p>B- TMP-SMX (DS Tab. [160 mg TMP and 800 mg SMX] twice daily), or Dapsone (1.5 mg/kg/d twice daily)</p>	<p style="text-align: center;">SURGICAL+MEDICAL</p> <p>- <u>Surgery</u> (to remove small lesions or debulking larger ones) THEN FOLLOWED BY:</p> <p style="text-align: center;"><u>ANTIFUNGALS</u></p> <p>- The most effective are : Ketoconazole (400mg), itraconazole (400mg), voriconazole or posaconazole for period of more than 10 MS.</p> <p>-NB: <i>Madurella mycetomatis</i> is not susceptible to the echinocandins.</p>

Painless swelling
 Sinus
 Granules

Mode: Implantation
 from soil.

Turn of 12